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PUBLIC DOCUMENT. No. 14.

TWENTIETH ANNUAL REPORT

OF THE

BOARD OF RAILROAD COMMISSIONERS.

JANUARY, 1889.

BOSTON:
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Part I.

COMMISSIONERS' REPORT.

Commonwealth of Massachusetts.

The Railroad Commissioners respectfully submit their Twentieth Annual Report.

Heating and Lighting Passenger, Mail and Baggage Cars.

Chapter 103 of the Resolves of the Legislature of last year is as follows: "*Resolved*, That the Board of Railroad Commissioners is hereby instructed to further investigate the subject of heating and lighting passenger, mail and baggage cars, and, after giving a hearing to the railroad corporations interested, to make further report thereon to the next General Court; and that until said report has been made, the said Board shall continue in force approvals of methods of heating already granted."

In order that the circumstances under which the foregoing Resolve was passed may be understood, the following statement, as to prior legislation and proceedings upon this subject, is made.

Chapter 54 of the Acts of 1882 required that every drawing-room car, sleeping car, passenger, mail and express car, owned and regularly used on a railroad in this Commonwealth, in which heating apparatus may be placed, shall be provided with such safeguards for protection against fire as may be approved in writing by the Board of Railroad Commissioners. It will be seen that this Act distinctly contemplated the continued use of individual heaters. Under this Act the Board approved of the safeguards used in connection with some of the heaters and stoves, and, with reference to others, required additional safeguards to be adopted. Several disasters in other States, which resulted in death by burning, brought

this matter again to the attention of the Legislature in the year 1887. The committee on railroads had several hearings relating to it, and the testimony taken was reported in print. The Legislature, thereupon, impressed with the importance of the subject, modified the law of 1882 by the passage of chapter 362 of the Acts of the year 1887, which provides as follows: "No passenger, mail or baggage car on any railroad in this Commonwealth shall be heated by any method of heating, or by furnace or heater, unless such furnace or heater shall first have been approved in writing by the Board of Railroad Commissioners: *provided, however*, that in no event shall a common stove be allowed in any such car: and *provided*, also, that any railroad corporation may, with the permission of said Board, make such experiments in heating their passenger cars as said Board may deem proper."

It will be seen that this Act prohibited absolutely the use of common stoves, was more stringent than the Act of 1882, and indicated on the part of the Legislature a determination to secure higher standards and a greater degree of safety than in the past. The grave responsibility placed upon the Board by the Act was further emphasized by the passage of a resolve instructing the Board to investigate the subject of providing better and safer methods of heating and lighting passenger cars used upon the several railroads in the Commonwealth, and to report to the next General Court (1888) the result of its investigation, with such recommendations and suggestions as it desired to make.

As set forth in the annual report of last year, this Board thereupon at once took measures to learn in detail the condition of affairs on the various roads. Having obtained from the companies statements, a digest of which is set forth on pages 55 and 56 of said report, and having carefully considered its duties under the Resolve, the Board, on the 24th of August, 1887, issued a circular to the railroads, which circular is printed on page 59 of the said report. In that circular it was stated that the Board was satisfied that the use of steam from the locomotive promised better results in the four great elements of safety, comfort, simplicity and economy, than any other device then known. Approval of the method of heating cars by steam from the locomotive at low pressure was given,

and each railroad company was recommended to prepare at once to make practical tests of the system during the winter (1887 to 1888). Appreciating, however, that the companies could not equip all their cars with apparatus for heating by steam from the locomotive in season for their winter business, the Board temporarily continued its approval of the use of certain individual heaters, as appears from the following clause: "The Board does not withdraw the approvals heretofore granted under the Act of 1882, as aforesaid, and hereby, for the present, renews such approvals: *provided, however*, that in no event shall a common stove be allowed in any passenger, mail or baggage car, the use of such stoves being expressly prohibited by the aforesaid Act of the present year."

Attention should be called to the next and last clause of the circular: "In selecting heating apparatus to take the place of the common stove, the Board recommends the adoption of the system of heating by steam from the locomotive, or at least of such heating appliances as can be used in connection with or readily converted into such system."

Special care was therefore taken to notify the companies that the system of heating by steam from the locomotive would probably be adopted as the standard, and to caution them to bear this probability in mind when putting in new apparatus in place of the common stove, the further use of which had been prohibited by statute. It was feared that some company might supply the place of its common stoves with other individual heaters, and, having incurred considerable expenditure therefor, might then, in default of any such warning, justly urge that after so large an expenditure for new heaters it ought not to be called upon to go to still further expenditure in making another change to a locomotive steam-heating system.

Through the fall of 1887 the Board continued its investigations, and embodied, in its report to the Legislature of last year, a full statement of its acts and findings, which statement concludes as follows: —

The Board deems that it would be injudicious for it to draw any conclusions or make any recommendations of legislation on the subject, until the experiments being tried this winter in this and other States have shown more clearly the capabilities and the limitations of the system. The Board will probably desire in the month of March to make further report upon this subject.

Carrying out the intention expressed in the annual report, the Board continued through the winter its investigation of the subject; and, after having received a special report by Prof. Gaetano Lanza in regard to the practical working of various systems, a copy of which report is embodied in the appendix hereto, the Board, on the 1st of May of last year, made the following special report to the Legislature: —

To the Honorable Senate and House of Representatives in General Court assembled.

The Board of Railroad Commissioners, in accordance with the intimation contained in its annual report, hereby makes further report upon the subject of providing better and safer methods for heating and lighting passenger cars.

Under the authority vested in the Board under the statute, to employ experts from time to time, as may be necessary, it early in the present year secured the services of Prof. Gaetano Lanza, with instructions to examine the workings of the various systems of heating by steam from the locomotive in use in this State, and especially to test the quantity of steam necessarily used for the purpose. Prof. Lanza has, during the past winter, made careful examination of the merits and defects of the various systems, and of the difficulties encountered in their operation, and has lately made this Board a full report of his investigations and conclusions.

Though the difficulties have not all been surmounted, though there is trouble from the leakage of steam and from the freezing of traps, and the imperfect action of reducing valves on the engine, the report made by Prof. Lanza confirms the Board in the opinion that the system of heating by steam from the locomotive is not only practicable, and conducive to the comfort and safety of passengers, but that it is also desirable as a measure of economy that it should be adopted as the standard throughout this State, and that the use of the separate heaters in or under cars should only be permitted under exceptional circumstances.

While the Board would not have been justified in taking action upon this matter until the experience of the winter had been gained, and the report of the expert made, it fully appreciates that it would now be unwarrantable to require the companies to equip all their cars for steam heating in season for the coming winter. During the summer the cars are in constant use, and great inconvenience to the public and loss to the companies would result if they should be taken off long enough to fit them with the required appliances. We deem it proper, therefore, to give the railroads until the fall of the next year (1889) to complete the equipment of their cars with steam-heating appliances. They will then have the coming fall, the winter and the spring in which to accomplish the work.

It is our purpose, unless otherwise instructed by legislative action, to issue a circular to the companies, notifying them that all approvals heretofore granted for methods of heating other than by steam from the locomotive will continue only until the first day of October, 1889, and that

thereafter methods of heating by the use of separate heaters, in or under cars, will be approved under exceptional circumstances only by special permit; and recommending the various companies to use all reasonable diligence in fitting their cars and engines with the necessary appliances for steam heating, so that, if possible, the use of the separate heater may, during the coming winter, become the exception rather than the rule.

Respectfully submitted,
For the Board,

GEORGE G. CROCKER, *Chairman.*

It will be seen that in the foregoing special report the Board indicated its intention to require the adoption of locomotive steam heating, but not until the first of October, 1889, allowing, therefore, one year longer than was allowed the railroads of the State of New York by Act of its Legislature; and it further indicated that it might thereafter under exceptional circumstances by special permit approve of methods of heating by the use of separate heaters. The position taken by the Board, however, met with opposition from some of the companies, was not sustained by the Legislature, and chapter 103 of the Resolves of last year, cited at the beginning of this division of the report, was passed.

By this Resolve the Board was instructed to further investigate the subject, to give a hearing to the railroad corporations interested, to make report to the next or present General Court, and until said report should be made to continue in force such approvals of methods of heating as had previously been granted. In accordance with said Resolve, this Board has continued its investigation of the subject, and on the 18th of December last gave a hearing to the railroad corporations interested.

At that hearing three roads only were represented. It was not to be expected that those companies which did not desire to make opposition to the views of the Commissioners would put in an appearance. Of the three roads represented, it was understood that one appeared only for the purpose of laying before the Board the results of its tests of the Martin and Sewall systems, without taking a definite stand in favor of or opposition to the system of locomotive steam heating. The objections raised by the other two companies were as follows: —

First. That, in case of the derailment of the engine or other serious accident to it, or in case it should leave the train, and by reason of snow-drifts or other impediment should be unable to return to it, the train would be left without heat, and the passengers would thereby suffer from cold.

This argument has frequently been made, and especially was it urged after the great snow-storm in March of last year. It must be borne in mind, however, that it is not an argument against locomotive steam heating, *per se*, but rather an argument that auxiliary heaters should be carried, for use in case there is for any cause a failure of locomotive steam.

Even as an argument for the use of auxiliary heaters, its importance seems to be overrated. In those sections in which the March snow-storm was the most severe, the railroads had probably never before experienced its equal. It was said to be the worst storm for fifty years. So extraordinary was it, that companies found that appliances, with which for years they had been successful in keeping their roads open, were entirely inadequate. If the chance of the recurrence of such a storm is regarded as sufficient to require provision to be made against it, the best way would be, not to make arrangements to keep the passengers warm and perhaps fed during the blockade, but to provide such additional and improved snow-ploughs and other apparatus as shall render it possible to keep the road open for traffic, or at least to raise the blockade quickly. As a matter of fact, several locomotive steam-heated trains were blockaded in this State in the March storm, and in one case, at least, the engine unnecessarily left the train, and was unable to return to it; and yet, so far as known, those passengers who remained in the cars suffered no permanent injury. The following letter contains an interesting and instructive recital of facts: —

BOSTON AND ALBANY RAILROAD COMPANY,
GENERAL MANAGER'S OFFICE, BOSTON, Jan. 8, 1889.

GEO. G. CROCKER, *Chairman Board of Railroad Commissioners, Boston.*

DEAR SIR: — In the matter of heating passenger cars by steam during the severe snow-storm of March 12, 1888, we had four passenger trains heated by steam, which were blockaded by snow-drifts, leaving Boston at 1.30, 2.30, 4.30 and 4.35 P.M. The 1.30 train was stalled near the arch bridge, something more than a mile east of Worcester, and consisted of four cars. After considerable effort to get the train through, the engine

was detached and went to Worcester for help; this was about 4 P.M. There was then no heat provided for this train after that time. The conductor, foreseeing that there might be trouble in consequence, moved all his passengers into one car, it then being warm enough, the curtains were drawn down, and the lamps all lighted in the car. These cars remained at that place until about eight o'clock the next morning. At no time was the thermometer less than fifty-five degrees, and no suffering took place. A number of the passengers remarked that they had been kept quite comfortable. Rugs and wraps were sent from Worcester to assist in their protection.

The engines of the 2.30, 4.30 and 4.35 trains, after being stalled, remained with their cars and kept the passengers warm all night, one engineman remarking that he could have stayed there a week and kept the passengers warm enough.

It was a mistake to detach the engine of the 1.30 train from its cars. An order has been issued, a copy of which I send you, which will prevent a recurrence of this mistake.

Yours truly,

W. H. BARNES, *General Manager.*

If an accident happens, or the passage of a train is blocked, in the State of Massachusetts, thickly settled as it is, with a large traffic continually passing to and fro on its roads, assistance can be, and on a properly managed road would be, furnished before passengers inside a closed car could suffer seriously from cold.

As the companies are already supplied with heaters of various kinds, it will cost but little to retain them in the cars; and, although their retention is believed to be unnecessary if steam heat is used, the only objections thereto are that they take up a portion of the seating space of a car, and that in case of a collision or an overturn they might break away from their fastenings and do injury.

Second. The second objection raised was that there is difficulty in keeping a uniform temperature with steam heat. It was not claimed that steam heating is in this respect inferior to individual stoves which heat by radiation from their surfaces, but it was claimed that it is inferior to some hot-water heaters.

It is undoubtedly true that locomotive steam-heating systems have not given thus far as uniform a heat as could be desired, and that there is great room for improvement. It is also clear that it is not difficult to discover methods for securing more

equable temperature. In spite of the fact that individual heaters are not so dangerous in buildings as they are in cars, economy of fuel and care, economy of space, and freedom from dust, have caused steam systems to be generally used in large buildings. There is no reason why the heat cannot be regulated reasonably well in cars. Thus far the main aim of inventors has been to secure a quick and satisfactory circulation through the train. To regulate that circulation, so as to give more uniform results in temperature, is a secondary and less difficult task. The present lack of uniformity in temperature is due partly to the fact that the employees have not yet learned to use the existing appliances for regulation to the best advantage, and partly to the failure to provide means for restricting the circulation to a portion only of the piping whenever it is desirable to do so. In the matter of securing uniformity of temperature the Board looks for continued and great advance, and does not deem that there are any insurmountable obstacles in the way. There should be a good and a good-sized thermometer in each car.

Proper ventilation is closely allied to uniformity of temperature. These two subjects should be dealt with together; and, in fitting out cars with heating apparatus, the importance of supplying fresh, clean air, and of taking off foul air without dangerous drafts, should not be overlooked. The travelling public have suffered too long and too much from the lack of proper ventilation of cars on some of our roads. Reasonably satisfactory ventilation can be secured by the exercise of a little care, and without large expenditure. A conductor should be persevering and energetic in his efforts to use to the best advantage the appliances furnished for securing uniform temperature and proper ventilation on the cars of his train; and his intelligent and constant oversight is especially needed on sleeping-cars, since passengers cannot at night readily make known their discomfort.

The following instructions for heating cars in passenger trains have been issued by the Boston & Albany Railroad Company: —

Boston, Nov. 19, 1888.

During the coming winter passenger cars will be heated by steam from the locomotive. To do this satisfactorily it will be particularly necessary to maintain a uniform temperature in the car.

All cars are provided with some kind of ventilation, and trainmen are expected to make good use of same. You will see that the thermometer registers seventy degrees, and when it is below seventy degrees, reduce the quantity of ventilation by closing some of the ventilators, and open steam-supply valves, connected with radiators under the seats. In no case will you close supply valves tight in freezing weather, unless there is some leak or other defect in radiating pipes.

To heat the cars, the valves on radiating pipes must be closed. After steam has been blown through the main pipe, and all the water is out (a pressure of forty pounds at the engine can be used to do this), open the valves on radiating pipes in rear car.

When steam has passed through the pipes and blown out of trap, close the valve on this trap and go to next car ahead and proceed as before, until all the cars have been supplied with steam. After this has been accomplished, reduce the pressure on the engine to twenty pounds or less, according to the weather. Always warm a train from the rear, towards the engine; never the reverse.

To warm extra cars that may be taken by a train, close the valves on radiating pipes in all cars that were connected with the engine previous to taking the extra ones. Blow steam through main pipe of cars so taken; then open the valves on radiating pipes of rear cars; proceed to warm these cars same as before.

When cars are left without a supply of steam, the valves on radiating pipes and in main pipe, also the valve on trap under car, must be opened to let the water out. The couplings on all cars must be separated to allow this water to escape.

Engineers will not shut off steam from a train unless there is some defect with the apparatus, or requested to do so by conductor.

In no case will an engine be separated from its train if stopped on the road by snow. Always remain with the cars and keep them warm. If another engine to help cannot be reached by the conductor, send word by man, or telegraph to division superintendent or agent at end of division for assistance.

A pressure of twenty pounds at the engine is sufficient to heat six cars, if judiciously used, after the cars are once warm. Engineers and conductors will report promptly any defect in the steam apparatus on engines or cars to the proper person in charge.

Conductors are required to know that all cars in their trains are properly warmed before leaving ends of division and upon the road.

H. T. Gallup,
General Superintendent.

W. H. Barnes,
General Manager.

Third. The matter of expense was brought up as an objection, but it was not claimed that the initial expense of changing to locomotive steam would be deemed a serious objection, if that system were demonstrated to be the safest and best.

In judging of the relative economy of individual heaters and locomotive steam heating, the following considerations, among others, are involved: —

There are now but few roads which advocate heating cars by direct radiation from stoves, and therefore, to simplify the problem, they can be omitted in its consideration. Individual hot-water heaters and steam heaters, so far as the piping in the car is concerned, require at least as much care and expenditure as the locomotive steam-heating systems. There must be a heater for each car, and that heater, with its surroundings, and with all its appliances of safety doors, grate, funnel, gauges, safety valve and connections, must be kept in repair. In cars in ordinary use, the fire in the heater in each car is practically kept burning all the time. The coal for that fire must be furnished and the ashes must be taken away. The individual heater must either be carried in the car throughout the year, occupying space in which passengers might be seated, or else the expense must be incurred of disconnecting it, removing it from the car, replacing it and connecting it again. With the locomotive steam-heating system, no portion of the seating capacity of the car is interfered with, either in summer or in winter. No coal is to be brought to the car, and no ashes are to be taken away. The dust from shaking down the fires is avoided. By one system one hundred cars would require one hundred fires burning all the time. By the other system the cars would be heated when on the train by the single locomotive fire, and when not in use it would not be necessary to keep them heated all the time, but only while being cleaned, and for a short time before they are to be used again. This heating would be done by steam plants at the various stations where cars are stored, and the steam plant could frequently be utilized for heating the station itself. Perhaps five of such steam plants would, on the average, be required for an equipment of one hundred cars. We have, therefore, on the one hand, one hundred separate heaters with fires burning in them practically all the time, and on the other

hand the fuel required for the extra work which the locomotive has to do, and the cost of maintaining five steam plants, less such portion of that cost as might be properly chargeable to heating stations.

We believe that locomotive steam heating will prove more economical than the individual heater systems; and this belief is now entertained by some of the companies which still object to making any change.

Fourth. The fourth objection raised — and it was urged with great earnestness by the representatives of one company — was, that the system of heating by steam from the locomotive is more dangerous than some of the individual heater systems. It was said that a reducing valve on the engine is not a sufficient protection against an excess of pressure of steam on the pipes in the cars; and that if, in case of failure of the valve to reduce the pressure, a pipe in the cars should be broken or should burst, the passengers would be killed by inhaling the steam, or at least be seriously scalded thereby. In answer to this objection, it should be noted that it is not necessary to trust solely to a reducing valve, nor would such a course be expedient. The train pipe should have on it a steam gauge, in plain sight in the front of the cab; and safety can still further be assured by the addition of a safety valve graduated to blow off at a pressure well within the limits of safety. A safety valve under the care of the engineer is more likely to be kept in order than the safety valves in each car used in connection with individual heaters. Furthermore, as a reducing valve may get out of order, it may be well to have an ordinary globe valve on the pipe, in addition. Indeed, if a globe valve, a steam gauge and a safety valve are provided, the reducing valve can, so far as safety is concerned, be dispensed with.

In order to test the actual danger which would result in case a pipe heated by locomotive steam should burst or be broken in a car, the Board, by the kindness of the Old Colony Railroad, which furnished an engine and a car for the purpose, made the following experimental tests: —

About midway in a car a short branch was placed upon the one-and-a-quarter-inch steam pipe, with a valve so arranged that it could be opened at once to its full extent. The opening was about six inches from the floor, and was directed

across the car. There was a steam gauge on the train pipe in the cab of the engine, and another in the car itself. There being eight or ten persons in the car, one-half of the ventilators being open, but the doors and windows being closed, as is customary when a train is running, and there being twenty-five pounds pressure, as indicated by the gauge in the car, the valve was opened. The steam blew directly across the car, and it was found that it would not burn the hand, held in the direct line of it, three feet from the opening. No windows or doors were opened until the expiration of two minutes, at the end of which time, though the valve on the engine had not been changed, the pressure of steam on the pipes in the car had been reduced by the escape to almost nothing. The only place where a person would have been injured was in the direct line of the escaping steam, and within three feet of the orifice.

In the next experiment, the steam gauge in the car indicated forty-eight pounds; and, from the time when the steam was allowed to escape in the car, to the time when the doors were opened, was two and one-half minutes. The car became filled with steam, and was simply uncomfortably warm in the vicinity of the escaping steam. A hand passed through the jet of steam, three feet from the orifice, was not burned. At the end of two and one-half minutes, though the valve on the engine had not been changed, the pressure, as indicated by the gauge in the car, was reduced to ten pounds.

In the next experiment, the gauge in the car indicated eighty pounds. The car filled with steam more rapidly, but there was no danger of burning in any part of the car except in the direct line of the escaping steam, and within five feet from the orifice. There was no danger at any time during this experiment in walking through the car, stepping over the jet of steam.

Another experiment was tried with the same pressure of steam (eighty pounds), and, as soon as it was allowed to escape, the doors and windows were opened, as they naturally would be under such circumstances. The steam condensed more rapidly, and the temperature was more comfortable.

Subsequently, experiments were tried with six cars, the steam being let onto all of them. These additional experiments were tried, to test the question whether the wider opening in

the valves on the engine necessary to supply a train of six cars with steam would make an explosion more dangerous. The steam was allowed to escape on the first car of the train, and, so far as the effect of the escaping steam was concerned, the results were not materially different from those with one car. In one of the last series of experiments, the pressure on the engine boiler being one hundred and fifty pounds, the opening from the boiler being three-quarters of an inch, and the globe valve and the reducing valve being each opened wide, the pressure as indicated by the gauges did not rise in the cab above ninety-eight pounds, and in the first car above sixty-five pounds; and the escape of steam was similar in its effect to that in the experiment with a single car, with a pressure on the car of eighty pounds.

The Board has approved of the use of locomotive steam only at low pressure; but it appears from these experiments, that, even with a pressure of eighty pounds of steam, which is not a low pressure, no person in a car would be injured in case of a break or explosion, except a person some part of whose body was within a few feet of the break, and in the direct line of the escaping steam Even then, if the portion of the body within the area of the jet was protected by clothing, a person would probably be able to move from one to six inches, according to his distance from the orifice, in time to avoid being burned. Since, also, the steam pipes are generally enclosed on three sides, there is only one chance in four for the jet to pass out of such enclosure.

With even eighty pounds pressure, though the escaping steam makes a great rushing noise, and though the car in the vicinity of the escape would quickly fill with steam, there would be no necessity for hurrying out of the car. All the passengers except the person in the direct line of the escaping steam, even if the windows and doors were kept closed, could retain their seats with perfect impunity and with but trifling discomfort, until the coupling was disconnected or the steam shut off. A person in a seat directly over the break might sit there with safety, provided no part of his body was within the area of the steam jet.

An examination of the returns made by the various companies during the past month, relating to their present systems

of heating, which returns are printed in full in the appendix, shows that the increase made since the report of last winter, in the number of cars heated by steam from the locomotive on the various roads, is as follows: —

Boston & Albany R.R. Last year, 101; this year, 226, beside 55 cars supplied with main steam pipes under the car, so that they can be used as parts of a steam-heated train.

Boston & Maine R.R. None heated by locomotive steam last year; 11 this year. "Shall get as many more equipped as Mr. Sewall is able to equip between now and the last of January."

Boston, Revere Beach & Lynn R.R. As per return of last year, locomotive steam heating only is used.

Cheshire R.R. None heated by steam last year; 9 this year. "We expect to continue to pipe for the Sewall steam system."

Conn. River R.R. Last year, 24; 34 this year; leaving 8 passenger and 6 combination cars heated by stoves.

Fitchburg R.R. Last year, 11; 73 this year, beside 22 baggage cars provided with main steam pipe to carry steam to cars behind.

Housatonic R.R. Locomotive steam heating not used.

New York & New England R.R. Last year, 16; 74 this year; 25 Baker heaters ordered to use in connection with steam from the engine.

New London Northern R.R. None last year; 5 this year, and 3 more ordered.

New York, New Haven & Hartford R.R. Locomotive steam heating not used.

Old Colony R.R. Last year, including the Boston & Providence, 67; this year, 150.

Providence & Worcester R.R. Last year, 17; this year, 23.

The status of locomotive steam heating in the State of New York is as follows: —

By chapter 616, Laws of 1887, it was provided that, after the first day of May, 1888, it should not be lawful for any steam railroad doing business in that State to heat its passenger cars on other than mixed trains by any stove or furnace kept inside the car or suspended therefrom, except in case of temporary emergency.

By chapter 189 of the Laws of 1888, it was provided that the time within which the foregoing law should go into operation should be extended to the 1st of November, 1888, with the further provision that the Board of Railroad Commissioners in special cases should have the power to extend the time for one year, upon application.

Most of the roads in the State of New York have complied with the law, and various systems have been adopted; for instance, the New York Central road has fully equipped its cars with the Martin system, the Delaware and Hudson Canal Company with the McElroy system. Several roads, prior to November last, applied to the Board of Railroad Commissioners for an extension of time, reporting to it that the work of equipping their cars with steam-heating apparatus was in progress but not completed. All were so far advanced that the Board did not extend the time further than the 1st of January, 1889.

Owing to the compulsory legislation in the State of New York, systems of heating cars by steam from the locomotive will, during the present winter, be in more general use in that State than in Massachusetts.

Some of the opponents of locomotive steam heating claim that it may be good for suburban or local but not for through trains; and others that it is good for through trains, but not for local trains. As a matter of fact, at the present time a person can travel from the Atlantic to the Pacific in trains heated by steam from the locomotive, and the system is in practical and successful operation for local traffic as well as for through traffic. The board of directors of the Boston & Albany Railroad, in their last annual report, make this statement: —

"We hoped the coming winter to find all our passenger cars, except those in mixed trains, heated by steam from the locomotive, for we believe this method of heating long since passed the experimental stage. The managers of some of our connections are of the opinion that it is still an experiment, and do not care to change the present method of heating. We must, therefore, retain heaters in part of the equipment."

The approvals which the Legislature of last year ordered to be continued in force, were mostly granted in 1882, shortly after the passage of the Act of that year, and they embrace several kinds of stoves, furnishing heat by direct radiation.

Heaters are now manufactured which would go through most accidents without scattering fire. We cannot, however, give assurance that they would be safe in severe accidents. The system of heating by steam from the locomotive can be made more safe than any of the individual heating systems can be made.

Locomotive steam heating has now acquired such a foothold that it will probably come gradually into general use without compulsory legislation.

In the matter of lighting passenger cars, the Board has at present no new facts or recommendations to submit.

Car Wheels.

An important element in the disaster at Bradford, on the Boston & Maine Railroad, in January last, was the breaking of a cast-iron wheel. In consequence of the accident the Board instituted an inquiry in regard to the manufacture, cost and durability of wheels, and embodied its findings thereon in its special report on the accident, which report will be found in the appendix. The information there collected, having been contributed by officials who have made a special study of the question, in theory and in practice as well, will be found to be of value.

The investigation showed that in purchasing cast-iron wheels it is necessary that they should be required to conform to stringent specifications, and should be subjected to searching tests. The competition between the various makers has been such that wheels which are unfit for use have been made in large quantities. While there is reason to believe that the roads of this State have generally avoided the dangers which accompany the purchase of the cheapest wheels, the safety of the public and true economy demand that still greater care should be exercised, and the general adoption of specifications and tests similar to those of the Pennsylvania Railroad is recommended.

The following extract, from the Bradford accident report, shows the position of the Board with respect to the relative merits of steel-tired and cast-iron wheels : —

"Statistics seem to prove, moreover, that the best of steel-tired wheels are safer than the best of cast-iron wheels. It is certainly an element in favor of the steel-tired wheel, that it will do the work of between five and ten cast-iron wheels. The degree of danger rapidly increases as a wheel approaches the condition of being worn out. This danger recurs in the case of cast-iron wheels five or ten times as often as in the case of steel-tired wheels, and the safety of the passengers is, therefore, in the case of the cast-iron wheel, to a much greater degree dependent upon thoroughness of inspection.

The managers of the main lines of road in this State generally agree that the steel-tired wheel is the safer and better wheel for passenger service. . . . It cannot be stated absolutely that cast-iron wheels are cheaper than steel-tired ones. Some classes of cast-iron wheels are cheaper than some classes of steel-tired ones, and the reverse is also true. The difference in cost is not such as to override questions of comfort, convenience and safety."

A very serious element of danger is involved in the passage over our railroads of freight cars coming from the west, the north, and the south, and provided with wheels of all varieties; some good, some indifferent and some bad; yet none so bad that they can be rejected on account of their external appearance. As passenger and freight trains increase in number, and as the speed and weight of freight trains increase, the chances multiply that some day a portion of a freight train, derailed by a broken wheel, will be struck by a passing passenger train, with a terrible loss of life. The rigid and repeated inspection of the wheels of freight cars is as imperative as the inspection of the wheels of passenger cars. The speed of freight trains is less than that of passenger trains; but, on the other hand, their weight is greater, and the average quality of the wheels is much inferior to those on passenger cars.

Switches.

The derailment at Bradford occurred at a switch, on the curve just north of the Bradford station, where the Georgetown Branch diverges from the main track. The switch was a Tyler switch, and this switch was undoubtedly a contributory cause of the accident. The Tyler switch is not generally considered, and is not, in the opinion of the Board, the best switch now obtainable. The use of this Tyler switch is, however, specially authorized in Public Statutes, chapter 112, section 159, which reads as follows: —

"All switches hereafter laid in a railroad track, used or intended to be used by passenger or mixed trains, including those so laid in renewal of existing switches, shall be of a kind known as the Tyler switch, or some other kind of safety switch approved in writing by the Board."

The Board deems that it is inexpedient to continue longer this special legislative sanction of the Tyler switch. The indorsement of particular devices has properly been avoided in the statutes, and there is no good reason why any exception to the general rule should be made in favor of the Tyler switch. So long as it receives special legislative sanction, this Board cannot object to its use in any place, no matter how important and trying its position may be. Were it as good as the best, it would still be contrary to the principles of legislation generally followed to give it special indorsement.

The recommendation of last year, that on double track roads facing points should be avoided wherever possible, is renewed. There is considerable difference of opinion on the several lines as to how far an avoidance of facing points is expedient. The Board believes that the standard set by the Boston & Albany and the Old Colony roads is not too high, and regrets to see on some of the other roads so many instances of side tracks to private business establishments with facing rather than trailing points.

That facing points should be avoided as far as possible, is one of the "important requirements" issued by the Railway Department of the Board of Trade in England.

When facing points are necessary, they should be kept in perfect condition, and the best-known appliances for safety should be used in connection with them.

Automatic Couplers for Freight Cars, Continuous Brakes for Freight Trains, and Uniformity in Steam Couplers.

In March of last year this Board sent to each of our senators and representatives in Congress a letter, of which the following is a copy: —

Boston, March, 1888.

To the Honorable Senators and Representatives of the State of Massachusetts in Congress assembled.

Gentlemen: — In the United States, thousands of men every year are killed or injured in coupling or uncoupling freight cars. During the past year the casualties from this cause in our State alone were one hundred and twenty-two, of which eleven resulted in death. This loss of life and limb can be prevented by the use of uniform automatic couplers; but, as the freight traffic is principally interstate traffic, attempts on the part of

individual States to secure uniformity within their respective jurisdictions would probably result in conflict and failure. While the desired end may be accomplished in time, without congressional action, delay means further unnecessary mutilation and loss of life. This subject is believed to be within the proper province of Congress, which alone can deal with it effectually, and with that promptness which its importance demands. The action of the Master Car Builders' Association, last year, in selecting a type of coupler as the standard for that association, has largely eliminated a serious difficulty, and has opened the way for congressional action.

Two other subjects of a similar nature demand your consideration.

The total number of brakemen injured in handling the brakes on freight cars is somewhat smaller than the number of those injured in coupling and uncoupling, but the number of fatal accidents is much greater. Most of these accidents can be averted by the use of train brakes, which have lately been perfected so that they can be successfully used on long trains of freight cars.

The success and the growth of the system of heating passenger cars from the locomotive, or other single source, will be greatly promoted if Congress will take such action as will insure the adoption of some uniform steam coupler.

We respectfully urge that you will give the three subjects above mentioned liberally of your thought and of your energies, to the end that Congress may, without unnecessary delay, refer them to the Interstate Commerce Commission, or take such other action as may seem to it advisable. We commend for adoption the following draft of a resolution: —

Resolved, That the Interstate Commerce Commission is instructed to consider what can be done to prevent the loss of life and limb in coupling and uncoupling freight cars used in interstate commerce, and in handling the brakes of such cars, and in what way the growth of the system of heating passenger cars from the locomotive, or other single source, can be promoted, to the end that said Commission may make recommendations in the premises to the various railroads within its jurisdiction, and report its doings to Congress at an early date, with such suggestions as to legislation on said subjects as may seem to it necessary or expedient.

We, who have been vested by the authority of the State with a commission which imposes upon us a special trust to promote the safety of employees and passengers on railroads, respectfully press this petition, as in duty bound, in the name of the multitude of those who have suffered, and in behalf of the multitude of those who are yet to suffer, unless saved by your philanthropic offices.

(Signed) George G. Crocker,
E. W. Kinsley,
Everett A. Stevens,
The Board of Railroad Commissioners for the State of Massachusetts.

The Board also communicated with the commissions of the various States, several of whom joined in sending a similar communication to their senators and representatives in Con-

gress. The Legislature of Massachusetts also adopted and forwarded to Congress the following resolutions: —

Resolutions Relating to Freight-Car and Steam Couplers, and to Freight-Train Brakes.

Resolved, By the Senate and House of Representatives in General Court assembled:

Whereas, Thousands of railroad employees every year are killed or injured in coupling or uncoupling and in handling the brakes on freight cars used in interstate traffic, and most of these accidents can be avoided by the use of uniform automatic couplers and train brakes; and

Whereas, The success and growth of the system of heating cars by steam from the locomotive or other single source largely depends on the adoption in interstate traffic of an uniform steam coupler; and

Whereas, These subjects are believed to be of pressing importance, and within the proper scope of the powers of the Congress of the United States, while attempts on the part of the individual States to deal with them have resulted, and must continue to result, in conflicting regulations, —

Resolved, That the Senate and the House of Representatives of the Commonwealth of Massachusetts, in General Court assembled, do most respectfully and earnestly urge upon Congress a consideration of the foregoing subjects, with a view to the passage of a resolution instructing the Interstate Commerce Commission to consider what can be done to prevent the loss of life and limb in coupling and uncoupling freight cars used in interstate commerce, and in handling the brakes of such cars; and in what way the growth of the system of heating passenger cars from the locomotive, or other single source, can be promoted, to the end that said Commission may make recommendations in the premises to the various railroads within its jurisdiction, and report its doings to Congress, at an early date, with such suggestions as to legislation on said subjects as may seem to it necessary or expedient.

Resolved, That a copy of these resolutions be transmitted to the Congress of the United States, and to each of our senators and representatives therein.

In Senate, adopted March 22, 1888.

In House, adopted March 27, 1888.

It will be seen that all that Congress was asked to do was to instruct the Interstate Commerce Commission to consider, to make recommendations, and to report. The various communications and resolutions were duly referred to the appropriate committees; but, so far as known, they were not taken up by the committees for consideration.

Notwithstanding the adoption of the Janney type as the standard of the Master Car Builders' Association, progress in

the application of couplers conforming to that type has not been so rapid as was anticipated and hoped for. If the railroad companies are not able, by agreement among themselves, to secure the adoption of a uniform automatic coupler, then Congress ought to interfere to prevent the yearly mutilation of employees. When a thousand and more are maimed every year, and when the maiming could be prevented, it is certainly worthy the attention of Congress, if it, and it alone, has power to secure the desired result.

The number of accidents in this State in coupling or uncoupling cars, reported during the past year, was 154, or 25 per cent. more than for the year 1887.

It no longer admits of question that freight trains should be provided with train brakes.

Cheap transportation has developed new and imperative necessities. The multiplication of freight trains, the increase in their weight, the dangerous acceleration in their rate of speed, impose upon the companies a duty to control such trains in a more efficient manner than they have done, or else to return to the day of small trains and lighter cars.

The Master Car Builders' Association deserves commendation for having long ago appreciated this necessity. Its repeated discussions of the subject led up to the celebrated first and second series of brake trials, which took place at Burlington, Iowa, in the springs of 1886 and 1887. These trials proved conclusively that the longest freight trains can be controlled by the use of train brakes costing only fifty or sixty dollars per car. So long as these devices were unknown, the community patiently bore the evils which it could discover no way to remedy. The destruction of human life, although appalling, seemed to be a necessary sacrifice for the sake of cheap transportation. The perils to train-men on the tops of the cars, and to engineers and firemen on long freight trains, who are entirely without means of controlling the immense masses behind them, were felt to be irremediable, as were also the great losses of life and property resulting from those destructive collisions which sometimes follow the breaking of enormous freight trains into two or more parts.

The experiments at Burlington showed that there is a practical and not too costly remedy for these evils. By means of

the train brake, the train is subjected to the control of the engineer or of the conductor, and may be stopped within a short distance. This distance is so short as to render it possible to avoid accidents which are now of frequent recurrence.

The application of the train brake will practically put an end to the human sacrifices due to the exposure of men upon the tops of freight cars; and will also facilitate the work of abolishing grade crossings, since the height of highway bridges over railroads doing freight business may then be materially reduced. The reduction could not be as much as six feet, the height of a man, because that would leave only twelve feet in the clear, and some cars are higher than that. It must not be assumed that a reduction in height would result in only a proportionate reduction of expense. The cost of the bridge span in either case would be about the same; but, in the matter of building the abutments, and the grading, the saving of expense would be considerably more than the proportionate reduction, while, in the matter of damages to adjoining estates in thickly-settled communities, the saving would generally far exceed such proportionate reduction.

As a rule, expensive buildings are not placed immediately adjoining the tracks. They are generally placed one hundred feet or so distant. A saving of three feet in height means a saving in the length of grading of from fifty to seventy-five feet. The distance from the track to which grade damages would extend would therefore be fifty to seventy-five feet less on each side of the track; or, taking both sides of the track into account, from one hundred to one hundred and fifty feet of roadway, or from two hundred to three hundred feet of frontage. The damages for this frontage would be saved, and the damages for the remaining frontage would be diminished.

It is probable that on each line of road this saving of expenditure in the case of one or two of the most important crossings would be equal to the cost of equipping all the freight cars owned by the road with automatic brakes.

Within three months there have been two serious accidents on the Boston & Albany Railroad, involving large destruction of property and extended interruption of traffic, which were the indirect result of the lack of freight-train brakes. In each

case the train broke in two, and the accident would not have happened had the train been equipped with an automatic train brake. When a train equipped with automatic brakes parts, the brakes are at once automatically applied to both sections of the train, and they are brought to a stand-still. Whereas, without a train brake, the engineer may go on some distance without discovering that his train has parted; and when he does discover it, if he is on a down grade, as was the case in each of the Boston & Albany accidents, it is not safe for him to stop.

In the accident which occurred on the Boston & Albany on the 4th of October, the engineer, having discovered that his train had parted, and being on a down grade, was hurrying on to get out of the way of the detached cars, when he was flagged to stop for a train ahead of him; and he was going so fast, and the appliances for stopping were so inadequate, that he was unable to avoid a collision, by which a large amount of property was destroyed. Fortunately in this case the trainmen on the detached cars in the rear discovered that the train had broken apart, in season to bring their cars to a stand-still before they reached the wreck.

The accident in December, on the Boston & Albany, was the indirect result of the delay caused by sending back the engine to pick up some detached cars which had been dropped a long distance behind on an up grade. When the loss of the cars was discovered it was unsafe to stop for them, because the train was then on a down grade.

Train brakes have already been extensively applied to express freight trains in the Western States. Their general application should be compulsory. Congress can deal with this question effectively, and it is to be hoped that it will soon take action upon the resolutions which were forwarded to it by the last General Court.

Directly as a means of avoiding loss of life and destruction of property and of facilitating the carriage of freight, and indirectly as an element in promoting the abolition of grade crossings, thereby avoiding the destruction of life and the interruption of traffic incidental to them, this subject is of prime importance.

Biennial Examination and Test of Safety Couplers for Freight Cars.

In accordance with the provisions of chapter 222 of the Acts of the year 1884, and chapter 242 of the Acts of the year 1886, the Board, in the month of July of the past year, after public notice, held hearings and made examination and tests of such forms of automatic and other safety couplers for freight cars as were submitted for that purpose. Several couplers were submitted for examination, but tests were offered in the case of only one or two. No approvals were issued.

Bridges.

The following is the report of Prof. Geo. F. Swain, the expert employed by the Board under the provisions of the Statutes of 1887, chapter 334. The attention of the companies is specially directed to the recommendations relating to guard rails, and the protection of jack-knife draws, so called.

Jan. 1, 1889.

The Massachusetts Board of Railroad Commissioners, Hon. George G. Crocker, *Chairman.*

Gentlemen: — I beg leave to submit the following report regarding the work which has been done in compliance with the statute providing for the inspection of railroad bridges. In accordance with chapter 334 of the Acts of 1887, circulars were issued by your Board in July of that year, requesting the railroad companies to furnish plans, specifications, strain sheets, and reports of inspection regarding their bridges. In my last report, dated Dec. 15, 1887, what had been done up to that time was stated, but it was very little; and I will, therefore, cover the whole work in the present report.

As stated in my last report, the fact that most of the railroad companies had not complete plans of their structures, and that some of them had no plans at all, rendered it necessary to allow much more time for the preparation of the drawings than was at first contemplated. In fact, plans of all the bridges have not even yet been received, while a large number have been sent in within the past six months, and even within the past three months. Lately, however, the plans have been received faster than it has been possible to examine them carefully, although a superficial examination has been given them all. It is probable that within a short time all the remaining plans will be received.

The reports of inspection, which the statute required the companies to make on or before Nov. 1, 1887, have now all been received. They did not all come in promptly, and, in fact, several have been received within a few

months. These reports have been examined, and anything requiring immediate attention has been brought to your notice.

The detailed examination of the plans has proceeded as rapidly as practicable, but the large number of bridges — many of them complicated in design or arrangement — has rendered the work a long one. As the bridges on each line have been examined, any cases which required immediate attention have been reported to you at once, and a final report on each line has been made when the examination was completed.

Any classification of bridges which shall give a fair idea of their number and character must be to some extent arbitrary. The general practice among railroad companies is to number each bridge, independently of its length or number of spans, although there may be several types of construction, or spans of different lengths, in the same structure. This method of enumeration is misleading, since a bridge consisting of several long spans, and a bridge spanning a single short opening, are given the same weight.

The classification which I have adopted is to count each span of truss bridge or plate girder, and also each span of wooden stringer which rests on masonry supports. Pile and trestle bridges, however, are given but one number each, irrespective of their length. This classification, coupled with a statement of the total length of pile and trestle bridges, gives, perhaps, a fairer idea of the aggregate amount of bridging than any other equally simple classification. Counted in this way, the bridges in the Commonwealth are as shown in Table I.

Table I.

ROAD.	Pile Bridges.	Wooden Trestles.	Wooden Stringers.	Braced or Trussed Wooden Stringers.	Wooden or Combination Trusses.	Stone or Brick Arches.	I-Beams.	Plate Girders.	Iron Riveted Trusses.	Iron Pin-connected Trusses.	Rails.	Pin-connected Iron Swing Bridges.	Iron Folding or Jack-knife Draws.	Pratt or Howe Jack-knife Draws.	Trussed Beam Jack-knife Draws.	Plate Girder Swing Bridges.	Trussed Beam Swinging Draws.	Howe Truss Swing Bridge.	Total Stone Bridges.	Total Wooden and Combination Bridges (fixed spans).	Total Iron Bridges (fixed spans).	Total Moveable Bridges.	Grand Total.		Total Length of Pile and Trestle Bridging (approximate).*
																									Feet.
Boston and Albany,†	8	2	4	2	23	56	49	33	61	–	–	–	–	2	–	2	–	–	56	39	143	4	242		3,468
Boston & Lowell,	7	4	35	8	–	10	4	27	26	–	–	–	–	2	–	–	–	–	10	54	57	2	123		6,000
Boston & Eastern,	21	–	9	–	2	1	27	9	1	7	–	1	–	6	–	1	1	–	1	32	44	9	86		8,280
Boston & Central Massachusetts,	12	1	35	1	4	1	–	17	36	2	–	–	–	–	–	–	–	–	1	53	55	–	109	443	2,472
Boston & Maine, W. Div.,	6	1	22	3	11	10	19	15	1	6	–	–	–	3	–	–	–	–	10	43	41	3	97		5,200
Worcester & Nashua,	–	–	6	–	3	4	–	13	1	1	–	–	–	–	–	–	–	–	4	9	15	–	28		–
Boston, Revere Beach & Lynn,‡	6	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	1	–	–	7	–	2	9		8,500
Cheshire,	–	–	1	3	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	–	–	9		–
Connecticut River,	–	–	–	1	1	9	1	16	10	7	–	–	–	–	–	–	–	–	9	2	34	–	45		–
Fitchburg,	1	12	7	1	14	22	14	91	6	30	–	–	–	1	–	–	–	–	22	35	141	1	199		3,300
Housatonic,	3	16	9	–	10	1	3	8	1	–	–	–	–	–	–	–	–	–	1	38	12	–	51		740
Martha's Vineyard,	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6	–	–	6		2,960
Nashua, Acton & Boston,	–	–	–	–	–	1	2	1	–	–	–	–	–	–	–	–	–	–	1	–	3	–	4		–
New London Northern,	5	2	8	4	23	1	3	4	5	–	–	–	–	–	–	–	–	–	1	42	12	–	55		580
New York & New England,	10	3	22	15	19	–	4	31	–	4	2	–	–	1	–	–	–	1	–	69	41	2	112		2,430
New York, New Haven & Hartford,	1	–	–	1	1	4§	6	63	–	9	–	–	–	–	–	–	–	–	4	3	78	–	85		–
Providence & Worcester,	–	–	4	1	12	2	–	9	–	2	–	–	–	–	–	–	–	–	2	17	11	–	30		–
Old Colony, Boston & Providence,	–	–	–	–	–	10‖	17	13	–	1	–	–	–	–	–	–	–	–	10	–	31	–	41	329	15,400
Old Colony, Old Colony proper,	56	4	76	4	9	17	15	90	5	5	1	2	1	3	–	–	–	–	17	149	116	6	288		
Totals,	142	45	238	44	138	149	164	440	153	74	3	3	1	18	1	3	2	1	149	607	834	29	1,619		59,330

* In some cases these figures may be several hundred feet from the truth.

† Including Webster and Springfield extension.

‡ Including Boston, Winthrop & Shore.

§ Approximate, — stone bridges not stated on schedule.

‖ Counting Canton viaduct as one.

This table shows that there are 1,619 bridges on the railroads in the State. The road having the largest number is the Boston & Maine, with 443 on all its lines together: then follow the Old Colony, with 329; the Boston & Albany, with 242; the Fitchburg, with 199; the New York & New England, with 112; while the others are all below 100.

The road having the largest number of iron fixed spans is again the Boston & Maine, with 212 spans: followed by the Old Colony, with 147; the Boston & Albany, with 143; and the Fitchburg, with 141.

The road having the largest number of stone bridges is the Boston & Albany, with 56: followed by the Old Colony, with 27; the Boston & Maine, with 26; and the Fitchburg, with 22.

The road having the largest number of wooden bridges is the Boston & Maine, with 191 (46 being pile bridges): followed by the Old Colony, with 149 (56 of these being pile bridges). The road having the largest number of draw spans is the Boston & Maine, with 14.

It is to be remembered that this table includes all bridges having an opening of ten feet or more between abutments, in the clear.

During the past year, or since November, 1887, detailed examinations and final reports to you have been made regarding the bridges on the following roads: Boston & Lowell, Eastern, Boston & Maine (Western Division), Revere Beach, Cheshire, Housatonic, Martha's Vineyard, Nashua, Acton & Boston, New London Northern, Providence & Worcester, Boston & Providence, and the Old Colony. The examination of the plans of the bridges on the New York, New Haven & Hartford (including the New Haven & Northampton), has also been completed, and a report regarding them is in preparation. The total number of bridges thus examined and reported on (including the report in preparation) is 884. Reports have also been made upon all the old bridges on the Central Massachusetts, and a special report on pile bridges has been prepared. The roads with regard to which final reports are still to be submitted are the Boston & Albany, the Central Massachusetts (newer bridges), the Worcester & Nashua Division of the Boston & Maine, the Connecticut River, the Fitchburg, and the New York & New England, representing a total of 735 bridges. The plans of many of these, however, have already been examined, and the work on the Fitchburg bridges is well advanced; so that, of the 1,619 bridges, the plans of all but about 400 have been carefully examined. It should also be said that in many cases bridges have been carefully inspected in the field, where an inspection of the plans seemed to render it necessary or advisable to do so. The principal work remaining to be done, therefore, is the critical examination of the truss bridges on the Boston & Albany, Connecticut River, Fitchburg, and New York & New England roads.

Since the enactment of the statute with regard to the inspection of bridges, a large amount of work has been done and money expended by the railroad companies in putting their bridges into proper condition,— probably more than in any equal length of time in the past. The following table, made up from the annual reports of the Board, will give an approximate idea of the sums expended for this purpose in every year since 1880.

Table II.

Showing the Approximate Amounts expended for Repairs and Renewals of Bridges.

ROAD.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Boston & Albany,	$59,838 96	$55,851 39	$86,151 23	$128,949 05	$149,212 82	$83,574 87	$93,542 31	$182,353 62
Boston & Maine,	142,748 21	259,225 85	188,105 71	184,357 55	221,908 96	224,189 64	374,931 20	400,458 28
Boston, Revere Beach & Lynn,*	12,406 42	5,639 10	5,375 55	4,692 21	1,072 18	756 73	5,648 66	27,704 84
Cheshire,	4,876 22	276 50	722 94	1,790 34	2,129 26	1,311 20	11,680 32	4,176 12
Connecticut River,	9,823 24	70,695 03	89,225 47	43,241 04	5,283 47	24,794 54	35,513 79	141,093 11
Fitchburg,	51,381 30	28,933 09	152,574 84	176,839 85	158,422 75	123,430 13	110,968 90	233,222 27
Housatonic,	5,192 35	1,264 41	3,307 31	1,711 05	1,836 71	472 00	2,991 02	2,451 31
New London Northern,	7,465 25	8,380 56	6,961 88	6,458 70	5,904 64	6,628 67	5,670 78	19,019 06
New York & New England,	231,074 68	112,523 04	149,029 60	164,692 56	19,824 63	56,757 11	137,331 78	171,495 08
New York, New Haven & Hartford,	274,196 78	57,998 74	261,559 40	309,385 54	246,862 54	208,846 01	75,966 52	364,919 36
Old Colony,	126,440 00	85,417 96	149,833 27	96,324 09	142,206 07	230,023 05	220,025 65	222,853 66
Providence & Worcester,	31,563 29	26,084 86	26,561 07	36,905 09	24,092 66	62,120 69	35,030 84	82,452 34
Martha's Vineyard,†	1,790 28	1,461 57	2,681 56	1,109 27	1,669 91	2,393 37	769 23	1,415 43
Totals,	$958,796 98	$713,752 10	$1,122,089 83	$1,156,456 34	$980,426 60	$1,025,298 01	$1,110,071 00	$1,853,614 48

* Including Boston, Winthrop & Shore. These figures include some new construction, and, in view of the small number of bridges, do not give a fair idea of repairs and renewals. See Table III.

† Including repairs of road-bed and track, and renewal of ties.

N. B. The figures given for any road in past years are the sums expended by all the lines at present controlled by the said road.

From this table, which, while not exact, is believed to be sufficiently approximate, it will be seen that during the past year the total amount expended has been about $700,000 in excess of the amount for any previous year included in the table, and that a large percentage of increase has taken place in the case of many of the roads, the exceptions being the Cheshire, Housatonic, Old Colony, and Martha's Vineyard. In the case of the Old Colony, the amounts expended in 1886, '87 and '88 are nearly alike, and far in excess of those of previous years. The Cheshire Railroad expended more in 1888 than in any year excepting 1887 and 1881. On the Housatonic Railroad but little has yet been done, though it is probable that the coming year will see a good deal of new work undertaken. In the case of the New York & New England, the amount expended in 1888 is greater than that in any previous year excepting 1881, when a large amount of work was evidently done.

The following table will give a more definite idea of what has been done on each road in the way of renewing and repairing within the past year and a half.

Table III.

Road.	Total Number of Spans. (See Table II.)	Number rebuilt since July, 1887.*	Number extensively repaired or strengthened since July, 1887.	Per cent. renewed since July, 1887.	Per cent. renewed and extensively repaired since July, 1887.	Remarks.
Boston & Albany,	242	5	19	2.1	9.9	Lateral bracing added in six other bridges.
Boston & Maine, — Boston & Lowell,	123	17	7	13.8	19.5	Guard rails changed in most cases from outside to inside.
Boston & Maine, — Eastern,	86	25	8	29.1	38.4	Inside guard rails added in most cases.
Boston & Maine, — Central Massachusetts,	109	13	5	11.9	16.5	One other bridge filled up; this does not include the bridges built new in the extension of the line.
Boston & Maine, — Boston & Maine, W. Div.,	97	20	-	20.6	20.6	Inside guard rails added in most cases.
Boston & Maine, — Worcester & Nashua,	28	7	-	25.0	25.0	Inside guard rails are to be added.
Boston, Revere Beach & Lynn,	9	-	5	-	55.5	$4,536.36 expended for repairs since July, 1887. Inside guard rails used.
Cheshire,	9	-	2	-	22.2	Six other bridges repaired; floors improved and guard rails added, and some new floor beams put in.
Connecticut River,	45	6	-	13.3	13.3	Three other spans were being erected in July, 1887. Guard rails added.
Fitchburg,	199	20*	15 to 20	10.0*	17.2	In addition, repairs on some fifteen or twenty additional spans will be very shortly carried out. Data are not precise. Outside guard rails.
Housatonic,	51	2	8	3.9	19.6	No guard rails.
Martha's Vineyard,	6	-	2	-	33.3	A narrow-gauge road.
Nashua, Acton & Boston,	4	1	-	25.0	25.0	Outside guard rails.
New London Northern,	55	7	14	12.5	26.6	Minor repairs on six additional bridges. Floors have in many cases been improved and proper guard rails added.
New York & New England,	112	8	14	7.1	19 6	Minor repairs on thirteen other bridges. Inside guard rails in use.
New York, New Haven & Hartford,	81	-	-	-	-	No guard rails in use.
Providence & Worcester,	30	3	6	10.0	30.0	Guard rails added and floors improved on other bridges.
Old Colony, — Boston & Providence,	41	12	4	29.3	39.0	All bridges provided with guard rails.
Old Colony, — Old Colony proper,	288	47	16	16.3	21.9	Two others filled up. Guard rails added and floors improved in many cases.
Total,	1,615	193	125	11.9	19.7	

* By rebuilt is not necessarily implied that both substructure and superstructure have been entirely rebuilt, but in many cases that the superstructure alone has been reconstructed.

It appears from this table that 193 bridges, or about twelve per cent. of the total number, have been rebuilt since the passage of the Act of 1887; while about 125 others have been repaired or strengthened, making a total of nearly twenty per cent. The road showing the largest percentage of renewals is the Boston & Providence, with nearly thirty per cent. renewed during the period referred to, while thirty-nine per cent. have been renewed or repaired.

While a great deal has thus evidently been done, it cannot yet be asserted that all the roads have got their bridges into satisfactory condition. Much more still remains to be accomplished, and I expect to see a good many new bridges built and old ones repaired during the year to come. It should be said, however, — and it will be evident from the tables given, — that the railroad companies have in almost every instance shown the most commendable energy, and a sincere desire to bring their bridge structures up to a proper standard; and if the same spirit continues to be shown, the railroad bridges in the State will all be in satisfactory condition within a very short time. Repairs and renewals will of course have to be made every year, as bridges, like everything else, are constantly wearing out.

Neither must it be supposed that the bridges which have been renewed or strengthened were in all cases in a dangerous or even precarious condition. On the contrary, many have been renewed which would probably have been safe for years to come, but which did not come up to the proper standard, or afford the proper margin of strength to provide for unforeseen contingencies.

There are three causes which may lead to the renewal or strengthening of a bridge structure: —

First. Faults of design, in consequence of which certain parts may be much overstrained, even up to the danger limit. Such faults have been found on some of the bridges, and have been corrected by renewals and repairs.

Second. A bridge deteriorates and wears out, and sooner or later must be renewed or strengthened.

Third. A bridge may have been well designed, and strong enough at the time when it was built; but the rapid increase in the rolling loads to which it is subjected may overstrain certain parts, and thus render it simply weak, though well proportioned. There were many bridges belonging to this category, some of which have been renewed, and some of which have not. In judging of such a structure, it must not be forgotten that good practice allows a large margin for just such contingencies as increase of loads; and that, although a bridge may be strained considerably above what would now be allowed in designing, it may yet be by no means dangerous or even doubtful. Just where the danger line lies, — just how much excess of strain should be allowed before renewing, — depends upon many circumstances, such as the *usual* loads, the speed, the number of tracks, the general character of the design, the workmanship, the reputation of the builder and designer, etc., and cannot be definitely stated.

Perhaps the most striking illustration of an enlightened policy with regard to bridges, and as showing at the same time the spirit which actuates many of our railroad corporations, is the case of the Connecticut River

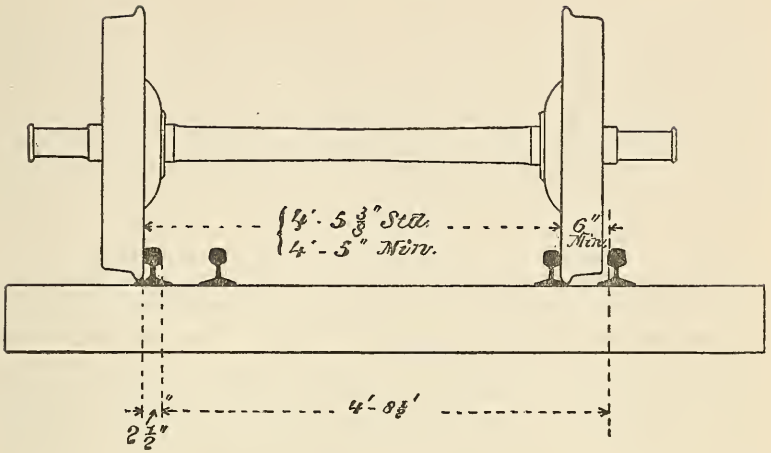
Railroad. During the past year this company has entirely rebuilt eight of its large bridges, replacing all of its Howe trusses by substantial iron structures. The old structures might perhaps have served for some time to come, yet they were not satisfactory or up to the modern standard; and the management determined to have every bridge absolutely above suspicion, and consequently of its own accord made the very extensive renewals which have been alluded to. The table also shows that a very large amount of new work has also been done by other roads, especially by the Old Colony, Boston & Maine, and Fitchburg.

With regard to bridge floors, considerable improvement has been made within the past year, and many roads are now using floors which are perfectly satisfactory, and which conform generally to the circular issued by your Board about a year ago. With regard to the arrangement of guard rails, however, the recommendations of the Board touching the distance between the guard and the track rails have not so generally been followed; and, as this is an important matter, I would call your special attention to it. When a truck is derailed and approaches a bridge, it is desirable that the guard rail which it strikes should gradually lead it back nearly to its former position, and allow it to safely run over the bridge on the ties, without being twisted and without bunching the ties. In order to effect this, three conditions must be fulfilled: —

First. The ties must be substantial timbers, laid quite close together, and held in position by proper guard timbers notched between ties and bolted at intervals, or by some other effective method. Your Board has recommended that the ties be not less than 6×8 inches, and spaced not more than 8 and preferably 4 or 6 inches apart in the clear. If securely held in place, a spacing of 8 inches between ties should allow the passage of a derailed truck without danger of bunching or breaking; but a spacing of from 4 to 6 inches is preferable, and still allows the guard timber to be notched between the ties. A closer spacing than 4 inches renders the notching of the guard timber inconvenient, in which case either spacing blocks may be used, or else the guard timber may be bolted to every tie, which, however, involves the use of an unnecessary number of bolts.

Second. The distance in the clear between guard and track rails must be sufficient to allow a wheel to run along between them, that is, it must be at least as great as the maximum width of the tire. For this, a distance of 6 inches would generally suffice, although it would allow too little play, and the spikes and joints would probably be injured by the passage of the derailed wheels. Locomotive tires are generally $5\frac{1}{2}$ inches wide, though sometimes as wide as 7 inches. Car wheels are not often, if ever, over $5\frac{1}{2}$ inches.

Third. The space must be so regulated that the distance between the inside of one guard rail and the outside of the opposite track rail shall be sufficient to allow the free passage of a truck, or shall correspond to the wheel gauge in use. This point is illustrated by the following figure: —



According to the standard adopted by the Master Car Builders' Association, the distance from inside to inside of two wheels on the same axle is 4 feet $5\frac{3}{8}$ inches. Wheels, however, sometimes vary from this; and, in some measurements quoted on page 71 of the report of the Association for 1884, the minimum found was 4 feet $4\frac{3}{4}$ inches. The Master Car Builders, however, have not only adopted 4 feet $5\frac{3}{8}$ inches as a standard, but have agreed that wheels measuring less than 4 feet 5 inches shall be, or may be, rejected. Now, supposing that a truck is derailed, and that the wheel which is outside the track is running close up against the track rail, as shown in the figure, then the minimum distance from that wheel to the inside of the wheel opposite is 4 feet 5 inches. Deducting from this $2\frac{1}{2}$ inches for the width of the rail head, leaves 4 feet $2\frac{1}{2}$ inches from inside of track rail to farther side of opposite guard rail. With a gauge of the track of 4 feet $8\frac{1}{2}$ inches, this leaves 6 inches in the clear between track rail and guard rail, as the minimum distance consistent with the free passage of the truck. If the distance is less than this, a derailed truck would tend to force a guard rail and the opposite track rail together, thus tearing up the track, or else to jump the guard rail. Six inches being the minimum distance, something should be allowed, in addition, for play, as well as for variations in gauge of track, in width of rail head, etc. The amount to be thus allowed will clearly depend largely upon the form of rail joint in use, since a derailed truck, if running across a bridge with the wheels *close* up to the track and guard rails, would not only injure the joints or perhaps cut the bolts, but might itself be thrown out of its position. At any rate, it is clear that sufficient play should be allowed to clear the joints tolerably well; and there appears to be every reason why play should be allowed sufficient to insure a perfectly free and easy passage for the truck. Once between the guard and track rails, a wheel or the truck to which it belongs cannot very well get twisted again, even with as much as several inches play on each side. With splice bars for rail joints, as used on several of the roads in this State, a clear spacing of 7 inches between track and guard rails would be sufficient, though it would be wise to allow more.

With angle bars, 7 inches, while sufficient to allow the passage of the wheel, would not allow the joints to be well cleared; and in this case a wider spacing is necessary. In the case of joints with a long wooden splice outside, some 4 inches wide, as still used on some of our roads, even more should be allowed, or about 12 inches in the clear.

It should be added that the distance in the clear between inside of locomotive wheels is generally 4 feet $5\frac{1}{4}$ inches for a gauge of 4 feet $8\frac{1}{2}$ inches, so that the results first obtained apply even to the case where such a wheel is derailed.

In the circular of the Board, issued a year ago, it was stated, for these reasons, that the distance between track rail and guard rail be from 7 to 10 inches, in the clear; and the Board has since recommended, whenever referring to this matter, that the distance be taken as 8 or 9 inches. The minimum of 7 inches specified, would, as first explained, allow one inch play, which would be a small allowance. I have noticed, however, on some roads, cases in which the guard rails were even less than 6 inches from the track rails. In such cases they may be worse than useless, and should at once be altered. I recommend that the attention of the railway managers be specially directed to this point, and that they be recommended to see that their guard rails are not less than 7 and preferably 8 or 9 inches from the track rails, or even more, if the construction of the joints is such as to require it. A good rule for general application, and an easy one to remember, would be to put the guard rail one foot inside the track rail centre to centre. This would allow about $9\frac{1}{2}$ inches in the clear.

In order to render such guard rails properly effective, they should further be provided with iron caps, which should resemble a frog point, and on which it should not be possible for any hanging chain to be caught; and on single-track roads, or where the rails are brought to a point at the farther end of a bridge, the space between the insides of the rails at the point should be filled with a block of some kind, with the object of preventing any hanging chain or other object from catching between the points.

In the circular of the Board regarding bridge floors, issued in 1887, the merits of inside as compared with outside guard rails were explained. The fact that the former will only be effective when a wheel is off the rail by a distance less than half the gauge, and that, if it should happen to be off by more than this distance, the inside guard rails, instead of leading the derailed truck back to nearly its proper position, would deviate it still more, is considered by some companies to be a serious objection. It is, however, very rare for a truck to be so far derailed, as long as the train holds together; and, if any of the cars of the train remain on the track, their natural tendency, unless the brakes are on, and the cars pushing against each other, is to pull back such a derailed car nearly into line with the others. Moreover, a truck so far derailed would be running on the ballast on one side, and outside guard rails, as ordinarily applied, would perhaps be ineffective, or even injurious; since the long ties on which they rest are not generally properly embedded in the ballast, and a wheel striking such a tie or rail — especially since the flange would not be out-

side — would sustain a considerable shock, and might have the effect of twisting the truck still more than it was originally. Clearly, if a truck is off the track by less than half the gauge, inside guard rails properly arranged will be the most effective means of bringing it back; if it is off *by more* than half the gauge, it can *only* be brought back by properly arranged outside guard rails, which in this case would contribute to safety. The combination of both methods, by using inside guard rails, and adding — beyond them and slightly overlapping them — short outside guard rails, would provide for both cases, and would no doubt be the most efficient and desirable arrangement.

Reference to Table III. shows the following results: Of the 14 corporations operating roads in the State, eight use inside guard rails, two outside guard rails, and four no guard rails at all. The four roads which have not yet put on guard rails are the Boston & Albany, Housatonic, Martha's Vineyard, and New York, New Haven & Hartford. Of these, the Martha's Vineyard is a narrow-gauge road, operated only at low speed, and guard rails are not essential, or at least not *as* essential as in the case of other roads. The Boston & Albany, in the case of a very few bridges, has made use of outside guard rails, consisting simply of a single length of straight rail at each end of the bridge, placed outside of the tracks and obliquely to them, in a manner somewhat resembling the flaring portion of the ordinary outside guard rail. On most of the bridges on this road, however, there is no provision, except a good floor, for carrying a derailed truck safely across, or guiding it in any way.

Of the roads using inside guard rails, the Old Colony and New York & New England have a standard spacing of 8 inches in the clear between guard and track rails; the Providence and Worcester's standard is 6 inches, while the other roads, so far as I know, have no generally adopted standard. The attention of all, however, has been called to this matter.

The roads using outside guard rails are the Fitchburg, and the Nashua, Acton & Boston.

In the case of one class of structures, namely, the jack-knife or folding draws so common in the neighborhood of Boston and along the eastern coast, the construction is peculiar, and the ordinary floor cannot be used. The rails here rest directly upon the upper chords, and between them there is a clear open space some 4 feet wide and extending the whole length of the draw; and the width of the upper chord is, in many cases, such that guard rails cannot be carried across. These spans generally occur at or near the centre of long pile bridges, and these bridges on either side of the draw are generally or frequently provided with guard rails. Should a truck be derailed before reaching such a bridge, it would safely run along on the ties over the pile portion, but would without much doubt lead to an accident upon arriving at the draw, since it would then be precipitated into the water or be tipped across the tracks.

Some provision should be made to carry a derailed truck across such a structure. One way of doing this would be to carry the guard rails clear across the draw; but, while this could be done in the case of new bridges, designed to meet this requirement, it would be impracticable in the case of

many existing structures. In such cases, where practicable, it would be advisable to use a rerailing guard at each end of the bridge, for the purpose of returning a derailed truck to the track if possible.

A rerailing device is used on some of the bridges on that part of the Fitchburg Railroad which formerly belonged to the State, and on one bridge on the Old Colony Railroad. The device is simple, and there are numerous cases in which it has done its work efficiently. Its more general use would promote safety.

Respectfully submitted,

GEO. F. SWAIN.

ACCIDENTS TO PERSONS OTHER THAN PASSENGERS OR EMPLOYEES.

The total number killed in the operation of our railroads, according to the returns made by the various companies during the past year, was	244
Total number injured,	538
Whole number of casualties,	782

These casualties may be divided into three leading classes: Accidents to passengers, 18 killed and 99 injured; accidents to employees, 80 killed and 311 injured; accidents to persons other than passengers and employees, 148 killed and 126 injured.

To a consideration of the causes for, and the means of diminishing the number of, the accidents to persons not passengers or employees, the Board desires specially to call the attention of the Legislature in this report.

These accidents are due to three principal causes: First, trespassing; second, inadequate station arrangements; third, grade crossings.

The accidents to trespassers were 114 killed, 82 injured; accidents at stations, 7 killed, 12 injured; accidents at grade crossings, 27 killed, 32 injured.

As it was believed that the experience of England and Germany would be instructive, correspondence (see appendices A and B) has been secured, embodying a discussion of the railroad problem in each of said countries, so far as it relates to the class of accidents now under consideration.

We were fortunate to be able to secure a statement regarding the English system from Mr. E. D. Barbour, a resident of our own State, of large experience in railroad matters, who was

in England during the past summer; and in regard to the German system, from Mr. A. Goering, professor of railroad engineering at the Polytechnic Institute, Berlin. These communications are worthy of careful perusal, and are commended to the attention of the Legislature as important and instructive contributions to the discussion.

I. — Trespassers.

During the past year one-fourth of all the accidents on railroads in this State have been accidents to trespassers. During the past ten years the average number of trespassers killed and injured each year has been 148, and an examination of the tabular statement of accidents appended to this report will show that the number of such accidents has been steadily increasing.

For the year ending Sept. 30,	1879,	it was		82
" "	1880,	"		112
" "	1881,	"		126
" "	1882,	"		132
" "	1883,	"		147
" "	1884,	"		161
" "	1885,	"		152
" "	1886,	"		159
" "	1887,	"		193
" "	1888,	"		196

Not only is there a great number of accidents to trespassers, but it is an impressive fact, that, whereas in other classes of accidents the number injured exceeds the number killed, with reference to trespassers the reverse is true — the number of those killed exceeds the number of the injured; so that, while the number of accidents to trespassers last year was, as has been stated, one-fourth of all the accidents, the number of trespassers killed was over forty-six per cent. of the whole number of fatal accidents, and the percentage for the last ten years is even somewhat larger.

Trespassers are generally killed or injured one by one. It is seldom that even two suffer at the same time. The shock to the community, as each case is reported in the daily papers, is too slight to produce a lasting impression. If one-half of the number of trespassers killed during the past year had been killed in tens instead of singly, the gravity of the case would be more fully and readily appreciated.

It is one of the main purposes of these reports to classify and mass the experiences of the year, so that the lesson to be learned from the aggregation of units may not be lost.

In order to insure a more definite realization of the wholesale slaughter and mutilation of trespassers which are going on in this community, a brief statement of each accident as reported during the past year is here given. An examination of the list will show that in the case of those injured the mutilation is frequently horrible.

Accidents to Trespassers.

Boston & Albany Railroad.

1887.

Oct. 20. At West Warren, Noah Avery had foot severely injured while stealing ride on freight train. Afterward amputated.

Oct. 25. At Russell, William Blake found dead on track. Killed by train while walking on track.

Oct. 31. At South Framingham, Thomas J. Bishop found dead on track. Supposed to have been struck by west-bound train; also run over by a freight train. Body badly mangled.

Nov. 3. At Boston switch yard, unknown man struck by engine. Walked away not much hurt.

Nov. 17. At Allston, Charles M. June, walking on track, was struck by passenger train and killed. Whistle sounded and bell rung.

Nov. 24. At West Newton, unknown man walking on track was struck by passenger train. Knocked down; not much injured.

Nov. 28. At Worcester, unknown man threw himself in front of engine. Was pushed aside by cow catcher. Again threw himself under the cars. Was instantly killed. Deliberate suicide.

Dec. 1. At Maple Grove, John McCarthy had foot caught and sprained.

Dec. 10. At Springfield, Benny Asher found on track 350 feet east of Main Street crossing. Supposed to have been walking on track.

Dec. 15. At South Framingham, David Dunn, stealing a ride on caboose of freight train, in getting off injured hip and leg.

Dec. 24. At Riverside, Maria Parks, while walking on track after dark, was struck by engine and killed.

1888.

Jan. 3. At Springfield, Mrs. H. C. Holmes, walking on track, was struck by engine and instantly killed. Warnings given.

Jan. 14. At Brookline, Alfred Gorham, walking on track, struck by light engine, and had his right leg cut off.

Jan. 18. At Huntington, William Munson found dead on track. Supposed to have stolen a ride, and on getting off fell under the wheels.

Jan. 31. At Warren, William Lally, while stealing a ride, had ankle run over.

Feb. 3. At Boston, unknown boy ran in front of engine going into station. Struck by pilot of engine and knocked down, but got up and walked away.

Feb. 15. At Cordaville, William Carr found dead beside the track. Evidently struck by some train in the night.

Feb. 26. At Russell, Patrick Kelly, on trying to board a freight train in motion, lost his hold, fell, and cut his head.

Mar. 13. At Millbury, A. W. Hall jumped from caboose in front of snow-plough, and had face cut.

April 1. At Hinsdale, Lawrence Fogarty, in attempting to board a train, lost his hold and fell between the tracks. Died later of internal injuries.

April 4. At Boston, unknown man, while standing between a wall and passing train, was struck, and dragged some distance. When found was dead.

April 10. At Rice's Crossing, John Ames, while walking on track, was struck by train and received bad scalp wound. Warnings given.

April 25. At North Wilbraham, G. W. Cantlin, a deaf mute, walking on track, was struck by passenger train. Had face badly cut.

May 4. At Boston, James Carroll jumped from engine (stealing ride), and was thrown down and injured.

May 6. At Warren, Mrs. Mary Wright, walking on the track, was struck by baggage car of passing train and fatally injured.

May 7. At Becket, W. Frissell came up an embankment in front of a train, was struck and instantly killed.

May 19. At North Grafton, James Connors, stealing a ride, jumped from car, and was injured about the head.

June 12. At Charlestown, Thomas Crowley, while jumping upon a train on Grand Junction Branch, fell under the wheels and had his left leg cut off.

June 15. At Athol Junction, M. Kelly jumped from car and had face hurt.

June 18. At Westborough, unknown men, while walking on the track in the evening, were struck by passenger train. One instantly killed, the other seriously injured.

June 13. At Westborough, John Ritzler, a tramp, stealing a ride on freight train, fell off and had foot run over.

June 22. At Worcester, James Hennessey, in attemping to board a freight train, fell between the cars, was run over and killed.

July 5. At Pittsfield, George Wilson, while walking on track, was struck by passenger train and instantly killed. Warnings given.

July 10. At Boston, Robert Gutery found on track; head hurt.

July 12. At Boston, Frank Spaulding attempted to cross the tracks in front of a mail car which was being switched, and was knocked down. Warnings given.

July 14. At Boston, John Delaney, walking with two others on the track, attempted to cross just west of Shawmut Avenue Bridge, and was instantly killed.

July 29. At "Shakers" station, an unknown man stepped from the ditch on the side of the track, and, when the train was about fifty feet from him, stepped in front of the engine and was instantly killed.

Aug. 2. At Springfield, Michael Hanley, while crossing tracks in freight yard, was struck by a car and fatally injured.

Aug. 9. At Saxonville, Ellen and Mary Mahar, while walking on the track, were struck by engine and instantly killed.

Aug. 20. At Hinsdale, John Dwyer jumped from freight in front of passenger train, and was killed.

Aug. 22. At East Boston, John E. Wallace, seven years old, attempting to board a freight car, fell and had one foot badly crushed.

Aug. 24. At East Boston, James O'Brien was run over and killed by a freight train.

Sept. 5. At West Brookfield, John Fitzpatrick's body was found beside the track with an arm cut off, and otherwise bruised. Apparently run over by some train.

Sept. 23. At Westfield, Con. Sullivan jumped from engine and was struck by tender. Had right leg cut off between knee and ankle.

Boston & Lowell Railroad.

1887.

Oct. 21. At Lowell, Wilson Pattee jumped from an engine and had arm and both legs mangled. Injuries probably fatal.

Oct. 26. At North Somerville, P. Commisky was found dead near the track immediately after the passing of a train at 5.43 P.M. Probably struck by the engine while on the track.

Nov. 6. At North Billerica, Peter Wood, while walking on the track, was struck by a freight train and injured about the face, head and leg.

Nov. 14. At West Chelmsford, J. A. Adams fell from moving train and received scalp wound.

Dec. 12. At Montvale, Peter Mead, while walking on the track, was struck by a freight train at 11.20 P.M., and killed.

Dec. 22. At Boston, Frank Cushing, attempting to cross the track in front of a train, was struck by an engine and had a leg broken.

1888.

Jan. 21. At Boston, an unknown man, attempting to cross the track in front of a passenger train, was struck and injured.

Jan. 25. At Mystic Wharf, W. Mahoney, stealing a ride on coal cars, had one leg hurt.

April 13. At Somerville, Henry Tessor, a boy, ran across the track and was struck by an inward passenger train and fatally injured.

April 16. At West Medford, Harry A. Brown fell from moving train and had one foot crushed.

April 20. At Charlestown, unknown boy caught on freight train and was knocked down and injured.

April 22. At Ware, John Willett jumped from moving passenger train and had one foot crushed.

June 5. At Belchertown, Sarah Thayer, while walking on a bridge of the Central Massachusetts Railroad, was struck by a train and had her right leg fractured.

June 14. At Winter Hill, Mrs. Emma E. Davis, while walking on the track between Prospect Hill and Winter Hill, was struck by a passenger train and killed.

June 28. At Charlestown, Daniel Crane, a boy, was run over and killed by a shifting engine.

July 12. At Somerville, Patrick Conkling, while walking on the track, was struck by a train and seriously injured.

Aug. 7. At Lowell, unknown man found dead on the track. It is not known how he came to his death.

Aug. 31. At Boston, Thomas Mugan attempted to cross track, was caught between deadwoods of two cars, and hurt.

Sept. 1. At Mystic Branch, W. West, attempting to jump from train while it was in motion, fell, and had both legs run over.

Sept. 8. At Prospect Hill, unknown man, while walking on the track, was struck by a train and badly injured about the head.

Sept. 13. Near Montvale Station, unknown woman, while walking on the track in the evening, was hit by a train and seriously injured.

Sept. 28. At Lowell, Martha J. Glines was found lying beside the tracks in Lowell yard at night, seriously injured. Supposed to have been run over while lying on the track.

Boston & Maine Railroad

1887.

Oct. 1. At Prison Point, John Carr fell off station platform in front of train, was run over and killed.

Oct. 8. At Everett, Fred H. Webster, sitting on the rails between the station and the ball house, was struck by a train and severely injured.

Oct. 11. At Wakefield Centre, Thos. E. Brown fell from moving train and had three toes crushed.

Oct. 14. At Boston, Joseph Foley, seven years old, while playing about the cars in the Boston yard, got under the wheels of cars which were being shifted and had an arm cut off.

Oct. 17. At Gloucester, David Keefe, attempting to cross in advance of a shifting engine, was struck by the tender, run over and killed.

Oct. 24. At Lowell, James Riley, while walking on the track after dark, was struck by a train and killed.

Nov. 21. At Somerville, the body of an unknown man found badly mutilated on outward track between Cambridge Street and Eastern Division. Probably struck by passing train.

Dec. 8. At Charlestown, Peter Cassidy, attempting to cross the tracks in front of a train, was struck, and received a scalp wound.

Dec. 21. At Lynn, Geo. Bellanger, while walking on the track, was struck by a train and fatally injured.

1888.

Jan. 3. At Rowley, Otto Magnusson, while walking on the track seventy-five feet east of station, was struck by a train and killed.

Jan. 10. At Bradford, unknown man killed.

Jan. 12. At Somerville, Tim Sullivan, while walking on the track on Mystic River bridge, was struck by a train and knocked into the river. Was rescued, but apparently not seriously hurt.

Feb. 13. At Everett, James R. Lynch, while walking on the track about five hundred feet east of station, was struck by a train and killed.

Mar. 17. At Salem, James Callahan, while walking on the track three-quarters of a mile west of Salem station, in the evening, was struck by a train and killed.

Mar. 26. At Salem, Wm. McGurr, attempting to board a moving train, fell and had head injured.

April 27. At Malden, George York, while walking on the track between Malden Station and Charles Street, was struck by a train and killed.

April 28. At Lynn, Wm. Welch and John T. Goodwin, while walking on the tracks in the freight yard, were run into by a freight train and injured. Welch had three toes cut off, and Goodwin's body was found next morning on the track near State Street.

May 7. At Peabody, Jere Murphy, while walking on the track, was struck by a freight train, received a scalp wound and had one hand crushed.

May 9. At East Everett, Isaac Russell, while walking on the track about five hundred feet west of the new station, was struck by a train, receiving injuries from which he died in a few hours.

May 30. At Revere, Mrs. Sullivan, while walking on the track, was struck by a train and thrown into the ditch, receiving slight injuries to shoulder and arm.

June 25. At Revere, J. Stafford, insane, threw himself in front of engine and was killed.

July 4. At Salem, John McDermott, attempting to board a baggage car, fell, and was run over and killed.

July 4. At Salem, Alfred Parker, while walking on the track, intoxicated, was struck by an engine and received cuts and bruises.

July 5. At Somerville, Annie Maginnis ran across the track in front of a moving train. She was killed; two companions escaped.

July 5. At East Saugus, Joseph Costello, while walking over the bridge at Saugus River, was struck by baggage car of a train, and received bruises about the hips.

July 11. At East Boston, Albert Hitchins, seven years old, while under a box car in the yard, other cars were backed down onto the same track, and he was run over. His right arm was cut off, and he received other injuries.

July 16. At Salem, Walter Johnson, attempting to board moving train, fell and had leg run over. Amputated.

July 17. At Salem, Mrs. Eliza Kelley, while walking on the track of the Marblehead Branch, was struck by a train and so injured that she died.

July 17. At Lynn, James Coleman attempted to board train after it had started, and received injuries to his leg.

July 19. At Danversport, Joseph Mercer run over; leg injured.

Aug. 28. At Revere, Samuel Backerstaff and Jacob Shelliday, walking on the track, were struck by train. Backerstaff was killed and Shelliday had an arm broken.

Sept. 1. At Lynn, James Keneran, while walking on the tracks, stepped in front of train and was killed.

Sept. 1. At Gloucester, Lucy D. Parkhurst, while playing near the tracks, was struck by passing train and received head wounds.

Sept. 3. At Salem, Warren Tuttle, attempting to board train in motion, fell, and had leg injured.

Sept. 3. At Amesbury, Geo. Stevens, attempting to board moving train, had leg run over.

Sept. 14. At Malden, J. A. Cobb backed from a station platform in front of passing train, and was killed.

Sept. 20. At Reading, unknown man, while walking on track, was struck by train and killed.

Sept. 22. At Haverhill, John Powers was caught between moving freight car and the platform of a side track, and was crushed to death.

Sept. 25. At Charlestown, Albin Cackett, attempting to board a train in motion, fell, and received injuries to head and back.

Sept. 28. At Worcester, Lewis A. Cobb threw himself in front of train, and was run over and killed.

Sept. 29. At Bleachery station, Joseph Scott, while walking on the track, was struck by a train and killed.

Sept. 29. At Salem, John A. Prescott, in order to catch a train, took a short cut through the tunnel, and when half way through met a train, by which he was struck and injured in face and head.

Boston & Providence Railroad.

1887.

Dec. 10. At Boston, John Aslop, while playing around freight cars in the yard, was run over and killed.

1888.

Jan. 11. At Attleborough, ——— Pratt, while on the track near turn-table, was struck by a car and had head and toe bruised.

Mar. 21. At Hyde Park, Arthur L. Perry threw himself in front of a train, and was not seriously hurt. When the train backed up to the place where he was, he threw himself in front of it again. Insane.

Mar. 30. At Roxbury, Eddie Reardon fell from a car, was run over and hurt.

April 7. At Roxbury, John Connery, while walking on the track, was struck by a train and fatally injured. Evening.

Aug. 25. At Attleborough, the body of an unknown man was found beside the track with skull fractured. Supposed to have been killed by train in the night.

Aug. 29. At Mount Hope, William C. Conlihan, while sitting on the track, was struck by a train, and had his head cut, jaw dislocated and back injured.

Sept. 20. At Hyde Park, Mrs. Mary L. Young attempted to cross the track, and fell. Patrick Tracy, in attempting to save her, was instantly killed. Mrs. Young had one foot crushed.

Sept. 23. Lothrop Hinckley, while walking on the track, was struck by a train and killed. Very deaf; did not hear the warnings.

Sept. 27. At Marlborough, Warren Pahmenter, attempting to get off a train while it was in motion, had three toes crushed.

Aug. 22. At Neponset, unknown man struck by express train and instantly killed.

Aug. 25. At Attleborough, unknown man found beside track. Killed by train in the night.

Boston, Revere Beach & Lynn Railroad.

1888.

June 16. Between Revere Street and Crescent Beach, an unknown man, while walking on the track, was struck by a train and instantly killed.

July 30. At Crescent Beach, Mary Galvin, while attempting to cross the tracks a short distance east of Beach Street, was struck by an express train and instantly killed.

Connecticut River Railroad.

1888.

Aug. 1. At Northampton, Patrick Coughlin, while on the new iron bridge watching the workmen, was struck by an engine and fatally injured.

Fitchburg Railroad.

1887.

Nov. 2. At West Fitchburg, Mrs. Ellen Hoar and George F. Hoar, while walking across a bridge, were struck by a passenger train and instantly killed. Signals given. Mrs. Hoar was blind, and her grandson was leading her.

Nov. 3. At Charlestown, Philip Williams stepped in front of an outward train, probably to avoid an inward train, and was injured in head, hands and feet. Died at hospital.

Nov. 8. At Somerville, James Reagan was found lying between rails, with head, arms and legs cut off. Was supposed to have been walking on the track at night.

Nov. 19. At West Cambridge, Mrs. Ellen Gurney sprang in front of an empty passenger train which was moving round the Watertown Junction Y, and was fatally injured. At 6 o'clock, and dark.

Dec. 5. At Worcester, John J. Murphy found dead between rails in yard, badly cut. Circumstances of the accident not known. Occurred in the evening.

Dec. 15. At Union Square, unknown man struck by an engine and instantly killed, while walking on the track after dark.

1888.

Jan. 2. At Concord Junction, a man supposed to be B. H. Sherwood was seen lying over the rails face downward. Was not seen in time to stop the train. When picked up, was cold. Death supposed to have resulted from other causes.

Feb. 24. At West Cambridge, Judah Donnie was found in the evening lying between the rails. Engineer did not see him in time to prevent the train from running over him. He was killed.

Apr. 20. At Gardner, Walter S. Kingsbury found dead beside the track.

Apr. 23. At Cambridge, James Powers was walking between the main tracks, and stepped in front of an approaching passenger train, the engine of which struck him, crushing arm and leg and injuring head. Died at hospital.

May 4. At North Adams, John C. Gifford, stealing a ride, jumped and was killed.

May 27. At Athol, George Anderson, while walking on the track at night, was struck by an engine and instantly killed. Warnings given.

May 30. At Littleton, Dexter Smith, while walking on the track in the evening, was struck by an engine and instantly killed.

June 22. At North Adams, John Gilhoody and John Shield, while walking on the track at 10 P.M., were struck by an engine. Gilhoody was instantly killed and Shield badly injured.

Aug. 4. At Orange, Asa Phillips, while walking on the track, was struck by an engine and injured about the back and head. He was old and deaf.

Aug. 25. At Concord Junction, Robert Elliott found at side of track with both legs cut off, at 11.35 P.M. Died in hospital.

Sept. 1. At Waltham, Michael Rooney, while walking on the track, was struck by a locomotive and received serious injuries in head. Died September 4.

Sept. 3. At Waltham, William Kelley fell from car, and had ankle injured.
Sept. 9. At Wendell, Hiram Hutchins, attempting to board a moving freight train, fell, and was injured in head and back.
Sept. 15. At Athol, H. Burnell, attempting to get upon passenger train, fell, and had both legs cut off.

Housatonic Railroad.

1887.
Nov. 8. At Great Barrington, Edward Scanlan, while lying on the track in the evening, was run over and killed. Supposed to be suicide.

1888.
Mar. 23. At South Lee, Thomas Quirk, while standing on the South Lee bridge, looking into the river, was struck by a train, knocked into the river and fatally injured. Signals given.

New Haven & Northampton Railroad.

1887.
Dec. 27. At Easthampton, Daniel Satterly, while walking on the track after dark, intoxicated, was struck by a train and fatally injured.

New York & New England Railroad.

1887.
Oct. 26. At stock yards, J. F. Gibbons, while walking on the track, was struck by an engine and had wrist sprained and elbow bruised.
Nov. 17. At Boston, Michael Marooney, while walking on draw-bridge, was struck by a train, and injured so as to necessitate the amputation of both legs between ankle and knee. No one saw the accident.

1888.
Jan. 24. At stock yards, John McDonough, while walking on the track with his back toward the train and a cap drawn over his ears, was struck and instantly killed. Whistle blown.
Feb. 19. At Harvard Street, John Donovan jumped on car while it was in motion, was struck by engine and fatally injured.
Feb. 29. At Mt. Bowdoin, Michael Halliday, while walking on the track, was struck by an engine and fatally injured.
Feb. 29. At Mt. Bowdoin, unknown man struck by engine and fatally injured. Walking on track.
Mar. 12. At Boston, Dudley Street, George M. R. Lund, while walking on the track over Chester Park bridge, seeing an approaching train, and not having time to reach the end of the bridge, dropped to the street below. He recovered, and did not seem much hurt.
April 11. At Islington, an unknown man, while walking on the track, was struck by an east-bound train and instantly killed.
April 17. At Millis, W. H. Harding, while attempting to cross the tracks, was struck by an engine and had one leg broken.
April 24. At Dedham, Fred Daniels had his foot crushed while playing on the turn-table.
May 11. At Blackstone, Arthur Tuite, struck by train and killed. Walking on track.
May 23. At Webster, John Morris, while lying between the tracks in the evening, was struck by freight train and killed.
June 2. At South Boston, Peter Anderson ran upon the track in front of a moving train, and was killed.

July 22. At Hyde Park, M. Troy, while walking on the track, was hit by a train and slightly injured on the head.

July 23. At South Boston, John Butler, while walking on the track, was struck and slightly injured by a passing train.

July 26. At Franklin, Michael Maroney, standing on the track and looking towards the train, which was coming round a curve, did not heed the whistle, and was struck by engine and fatally injured.

Aug. 30. At Hyde Park, —— Robinson, running across the tracks, was struck by train. Not much injured.

Sept. 15. At South Boston, Michael Flaherty, a boy, and —— Lary, a girl, were struck by train while crossing track. Boy killed and girl injured.

Sept 26. At Mattapan, two unknown men, while walking on the track, were struck by the Providence express, and killed.

New York, New Haven & Hartford Railroad.

1888.

April 13. At Springfield, unknown man found on switch track after switch train had passed. Leg crushed, head badly injured, and unconscious. Leg amputated next day at hospital. Accident happened in the evening.

Old Colony Railroad.

1887.

Oct. 24. At Lowell, Michael Carey, while walking on the track, was struck by a train and instantly killed. Seventy-four years old, and said to be deaf.

Oct 29. At Berkley, an unknown man, while lying on the track, was run over and killed at 6.20 P.M.

Dec. 26. At East Bridgewater, Peter Dorey, while lying on the track, intoxicated, was run over and had one foot crushed.

1888.

Jan. 14. At Fayville, Edgar Thompson was run over and killed while attempting to board a moving train.

Jan. 24. At Harrison Square, William Welch, while walking on the track in the evening, as is supposed, was run over and killed. No one saw the accident.

Feb. 28. At Wollaston, John Cushing, while walking on the track between Wollaston and Atlantic, in trying to avoid one train stepped in front of another, and was fatally injured.

Mar. 15. At Buzzard's Bay, John Malley stepped upon the track without noticing an approaching train, and was struck by it and instantly killed.

April 4. John Thompson and Edward Nawn, struck by a train. Both killed.

May 12. At Pope's Hill, Arthur Giles found dead on the morning of May 13, and is supposed to have been run over the night before about 11.23, while walking on the track.

June 8. At Somerset, John F. Kelly, while walking on the track, was struck by a passenger train and killed.

July 7. At North Hanson, Leonard Gurney, while walking on the track, being deaf, was struck by an engine and fatally injured.

July 24. At Neponset, Thomas Griffeth, while walking on the track, was struck by a freight train switching in the yard, and run over; one arm was cut off, and head injured.

July 28. At South Framingham, Louis Farrell jumped from freight train and had foot hurt.

Aug. 22. At Neponset, unknown man, walking on the track, was struck by train and instantly killed.

Sept. 15. At Satucket, John Ferris stepped upon the track in front of a train, and was cut on head and bruised on body.

Sept. 7. At South Boston, Orrin Carpenter stepped in front of a train moving in opposite direction, and was instantly killed.

Sept. 25. At Atlantic, John Shehan, while lying between the tracks at night, had one hand crushed by a passing train.

Providence & Worcester Railroad.

1887.

Nov. 22. At Blackstone, John Moran, attempting to board moving train, was dragged some distance and bruised.

1888.

May 11. At Millville, H. Howard, while walking on the track, too drunk to heed the danger signal, was struck by an engine and thrown down the bank. Not seriously injured.

May 21. At Sutton, Frank Saintimend, fifteen years old, while standing on the track looking at a freight train, was struck by a passenger train going in the opposite direction, and badly hurt. Warnings given.

July 13. At Millbury, Harry Suraborne, in company with two others, running through the bridge south of station to take the train when stopped, was struck and killed.

July 28. At Worcester, Xavier Coutois, while walking on the track, was struck by engine of a freight train, and killed.

Union Freight Railroad.

1887.

Oct. 8. At Henchman and Commercial streets, Boston, William H. Whitman, probably run over at night by a freight train. Body found an hour after train passed.

1888.

July 12. At Eastern Avenue, Boston, James Normon, a boy, attempting to crawl under a car while the train was in motion, was run over and instantly killed.

If such slaughter is a necessary part of our railroad system, it may be excusable. Its continuance, if it can readily be prevented or diminished, is inexcusable. It is unnecessary to reply to the cold-blooded argument that these persons would not have been killed or injured had they not been doing that which they had no right to do. If there is a remedy for the slaughter, — if people can be prevented from falling victims to their own imprudence on railroad tracks, — then to allow the slaughter to continue savors more of barbarism than of civilization.

Trespassers are killed and injured in great numbers all over the United States. Whatever Massachusetts may do in this matter to prevent the loss of life and mutilation now going on, will have its influence outside of this State in directing attention to the subject, and in securing the enactment and enforcement of measures of relief.

In the last annual report of the Board of Railroad Commissioners of the State of New York is the following: —

> The most serious cause of death to others, not employees or passengers, was walking or being on the track, having caused the death of 233 and injury to 124, as against the death of 247 and injury of 111 in 1886. The Board can only repeat its language in the previous annual reports on this subject; to wit, the sufferers generally, almost invariably, were trespassers, frequently suicides. The law forbids walking or being on the tracks of railroads, and makes it a misdemeanor punishable with fine; but it seems practically impossible to enforce it in this country, particularly away from the cities. In the yards and depot grounds the railroads make an effort to expel trespassers, but they meet with but little encouragement from the civil authorities. This is particularly true with regard to children and beggars picking up coal and cinders. In view of the terrible loss of life incident to its violation, the law should certainly be enforced with more vigor.

The number of trespassers killed and injured in New York State in the year 1887 was 1 to 20 miles of track, while in Massachusetts, for the same year, it was 1 to every 10.4 miles of track, and this year it is 1 for every 10.5 miles of track.

From the correspondence appended to this report in relation to accidents from a similar cause in England, it appears that the number of trespassers killed in Great Britain in the year 1887 was 203, suicides 70, and injured 114, making a total for the year of 387. This is only 1 to every 50 miles of road.

Estimating by train miles, there was 1 accident to trespassers in England to each 0.73 million train miles, while in this State there was 1 to each 0.21 million train miles.

In Germany, as will be seen from Professor Goering's report, the cases of injuries to trespassers are so rare that they are not separately classified in the railroad statistics. The precautions are such that it is extremely seldom that any one, other than an official or employee, knowingly walks on the track. In the year 1886–1887, in Germany, the total number of private persons reported as killed and injured on the tracks, including all those private persons injured at grade crossings

and at stations, — the latter forming by far the greater part of the whole, — was 307, or 1 to each 77 miles of road.

For Massachusetts, the total of all the above classes put together would be 274, or 1 to each 7.5 miles of track. The population of Germany per square mile does not differ materially from that of Massachusetts.

These figures show that our State is, in this matter, far below its proper standard; and upon the Legislature, upon the railroad companies and upon this Board, rests a great weight of responsibility for the destruction of life, and the suffering resulting from the insufficiency of the means taken to prevent trespassing.

The success in Germany in dealing with this subject seems to be due to various causes. First, the arrangement of their stations: the inclosing of their station grounds, the use of fences between tracks at important stations to prevent people from crossing the tracks, and the furnishing of convenient means for passing over or under the tracks. Secondly, the protection by gates of all the grade crossings on the principal lines. Third, police regulations.

Professor Goering, in his report, states: —

> Not only in Germany is it looked upon as an offence and known to be punishable to enter upon the property of another, but it is strictly forbidden to enter, without permission, upon the right of way of railroads outside of grade crossings and station platforms, or to cross the tracks at grade crossings if the gates are closed. Offences of this kind are severely punished. Everybody in Germany, therefore, from childhood up, knows that he runs a great danger and renders himself liable to a considerable fine by going onto a right of way or upon the tracks, or by undertaking, after leaving a train, to go diagonally across or along between the tracks, instead of taking the prescribed exit from the station platform to the street. Every brakeman, station employee or flagman, has in such cases the right, as a member of the railroad police, to arrest the offender at once, and to conduct him to the nearest police station, unless the offender is able to give satisfactory proof of his identity, and to deposit security equivalent to the amount of the fine to which he is subject. In cases of roads with a heavy traffic, and especially at and in the neighborhood of stations, it is in fact almost impossible, on account of the strict supervision and the large number of employees at the railroad, for anybody to infringe these rules.

In England the precautions are of a different character. Grade crossings, which are comparatively few in number, are protected by gates, which are closed across the railroad, except when they are closed across the highway and open for the pas-

sage of trains. At stations the platforms are elevated from thirty to thirty-six inches above the tracks, and there is no convenient way for the public to descend from the platforms to the track. Access from one platform to another is secured by an overhead bridge or subway. The public could, to be sure, get off the platform at the end; but there is no occasion for them to go to the end of the platform, since the exits from the station are near its centre. The railroad companies have authority to pass by-laws for the government of the public while using the railroad, and, subject to the approval of the Board of Trade, to impose penalties for trespassing. The uniform penalty of forty shillings for trespass has been adopted, but a requirement that personal warning shall be given to offenders before arrest, interferes with the efficiency of the regulation.

In our State we practically make it very convenient for persons to trespass on the location of a railroad. At our stations the platforms are on a level, or nearly on a level, with the tracks. Only at a few of the large cities are the station grounds and freight yards inclosed by effective barriers. As a rule, the public has easy access to any portion of the station grounds, yards and tracks. At almost any point along the line of a railroad, the public can pass onto the tracks without trouble, and walk there without molestation from police authorities; but the stations and grade crossings furnish the most convenient means of access to the track, and almost all trespassers enter upon the track either at one or at the other. Upon grade crossings undoubtedly rests the chief responsibility. The part which they play in tempting persons to walk on the tracks is a count in the indictment against them which is frequently overlooked. What can be done towards abolishing grade crossings and towards improving the arrangement of stations will be discussed later in the report. It remains only to consider here what can be done to diminish the amount of trespassing, without going to the expense of separating grades or re-arranging or re-locating stations.

Of the accidents to trespassers, twelve per cent. happened in the city of Boston, twenty-five per cent. in other cities, and sixty-three per cent. in towns. One-fifth of the whole number of trespassers were stealing rides.

Especially do the statistics in relation to Germany afford strong evidence that simple remedies are at hand. To each mile of track there are twice as many grade crossings in Germany as in Massachusetts; and yet the accidents to trespassers per mile of track in Germany are less than one-tenth as many as in Massachusetts. The German and the English regulations may be found in the communications in the appendix.* The laws in this State relating to trespassing are the following: —

Public Statutes, chapter 112, section 195: "Whoever without right knowingly stands or walks upon a railroad track, shall forfeit not less than five dollars and not more than fifty dollars."

Section 198 provides that whoever rides, drives or leads a horse or other beast on a railroad without the consent of the corporation, except in the proper use of a way at a grade crossing, shall for each offence forfeit a sum not exceeding one hundred dollars and be liable for any damage resulting therefrom. Most of the cases of trespassing occur under section 195.

By chapter 103, sections 13 to 20, provision is made for the appointment by the mayor and aldermen of a city, or the selectmen of a town, of railroad employees as railroad police, with authority to act in those places on the line of the road in which a copy of their appointment has been filed with the city or town clerk.

Sections 17 and 18 of said chapter define the powers and duties of such railroad police officers, and it would appear that they have no authority to make an arrest for trespassing.

The companies from time to time, in special cases, generally being instigated thereto by thefts committed in their freight yards, have secured arrests for trespassing; but it has been difficult to get a conviction under the law, and the arrests have been sometimes followed by retaliatory measures. Obstructions have been found on the track, and fires have been set. The companies have naturally arrived at the conclusion that it is better to let law-breaking trespassers suffer, than to endanger the lives of their law-abiding passengers. The fear of retalia-

* Appendices A and B.

tion is, however, no excuse for permitting violations of law to continue. The police service should be sufficient to prevent the danger of retaliation.

Legislation covering the following points is recommended: —

First. Persons other than the officials or employees of a road should not be allowed on the tracks, embankments, bridges or other railroad works, unless such persons have special permission therefor, or are with reasonable expedition crossing the railroad at a grade crossing, having entered thereon when the gates, if any, were open, and when the flagman, if any, was not giving a signal of danger.

At stations, persons other than officials or employees should not be allowed to stand on the track or walk along the same, and should only be permitted to cross the track when necessary so to do, in order to get from a passenger platform to a train, or from a train to the nearest platform. Any person violating the foregoing provisions, and any person opening gates at public ways, or disturbing or climbing over the fences enclosing railroad locations, or passing by or under gates when they are closed, or passing by and disregarding a flagman when giving notice of danger, should be deemed guilty of trespass. The penalty should be a fine of small amount. Imprisonment in case of default in the payment of the fine should be brief. Provision should be made for summary arrest, without a warrant; but the offender, if able to give satisfactory proof of his identity, should immediately upon arrest have the privilege of giving a recognizance for his appearance in court, or simply an acknowledgment of service of summons.

Second. Trespassing on the tracks has now become so common, and the law imposing a penalty therefor has been so nearly a dead letter, that penalties for trespassing ought not to be enforced without giving the public the most ample notice. Warning-boards, calling attention to the Statutes relating to trespassing, should be placed in prominent positions in stations, especially at the ends of station platforms and also on the location of the railroad on each side of every grade crossing. The form of notice used on the Great Western Railway is as follows: —

Trespass Notice. — All persons are warned not to trespass upon the railways or stations of the company, and notice is hereby given, that, pursuant to the provisions of the company's acts, every person who trespasses upon any such railway or station in such manner as to expose himself to danger, renders himself liable to a penalty of forty shillings, and, in default of payment, to one month's imprisonment for every such offence.

Third. Some additional provision must be made for the enforcement of the law. The arrest of trespassers must not be left to railroad employees having other and inconsistent duties to perform. A gateman or a flagman, a station agent or baggage master, cannot leave his position and neglect other duties to make an arrest. There should be a force of police specially assigned to this and other similar duties. A force appointed by and under the control of the railroads would be objectionable, because, among other reasons, the danger of retaliation would be increased.

It is evident that it would not do to leave the enforcement of the law to municipal police, hampered as they would be by town and city lines. It seems, therefore, that, whatever arrangement is made for defraying the expense of the force, it should be a body of police appointed by and under the authority of the State, and responsible to it. A small force of active and judicious officers could practically put a stop to walking on the tracks. In no other way at an equal outlay can so many lives be saved in connection with the operation of our railroads, as by dealing intelligently and efficiently with the subject of trespassers.

II. Stations.

For the purposes of this report, only such defects of the arrangements at stations will be considered as tempt or permit people to cross the tracks on a level therewith. The Board has heretofore recommended that the companies should either put gates on their car platforms, so that the passengers can only leave the cars on the side next to the station platform, or else that they should adopt a regulation prohibiting a train from passing another train which is stopping at a station. This alternative regulation is of course objectionable, because it would cause serious delay to the railroad traffic. While these expedients diminish, they by no means eliminate, the dangers.

Generally speaking, passengers can cross the tracks at a station whenever they please, wherever they please, and in whatever direction they please. If it happens to be convenient, they may cross diagonally, or even walk along between the rails. The temptation to use the track as a footway is increased when there is a grade crossing adjoining the station. In such case, passengers who wish to cross the tracks are not obliged to use the guarded highway crossing, but they can and do make a short cut diagonally across the tracks. The walking is good, and there is nobody to interfere. The gates at the highway may be closed, or the flagman may be out waving his flag, but such fact is not necessarily brought to their attention. Sometimes the victim is ignorant of the approach of a train; sometimes he miscalculates his chance of escaping it; sometimes he makes a misstep.

The track is a dangerous place anywhere, — it is frightfully dangerous in the vicinity of large cities; but people will run all risks, and use tracks at stations as a general footway, unless deterred by penalties or prevented by barriers. The number of those killed while crossing tracks in the vicinity of stations is constantly increasing, and the danger on three and four track roads in the vicinity of Boston is excessive.

On the German roads, at stations where there is a large traffic, fences are run along between the tracks for the whole length of the stations, and each track has a platform to which passengers gain access without crossing any track on a level therewith, overhead bridges and subways being provided whenever necessary.

The traffic on the lines running out of Boston, and within a radius of twelve miles, is so great that similar arrangements ought to be provided. If a grade crossing adjoins the station, there is special reason why the grades at that crossing should be separated. If such separation cannot be brought about, the station on roads of two or more tracks should be removed to a point at least five hundred feet from the crossing. Whether either or neither of these things is done, there should be a judicious use of effective fences and of overhead or underground footways at important stations on the main lines near Boston. These should be provided at once. To wait until the work of separating grades or relocating stations is accomplished will cost many lives.

Passengers might be allowed in some cases to cross tracks at a level therewith, subject to the supervision and control of the employees of the road, such control being exercised by means of a fence with asliding gate in it; but this arrangement affords only a partial remedy, and might prove to be more expensive even, in the long run, than an overhead or underground footway.

Free access to the track on all sides of a way station should not be permitted. The entrances and exits at way stations, as well as at terminal stations, should be confined to a few definite channels; and to approach or leave a station except by such channels should be forbidden and punishable.

Nobody can watch the stations on the Providence division of the Old Colony Railroad between Boston and Readville, and on the Boston & Albany between Boston and Auburndale, without shuddering at the perils to which the public is exposed, and without wondering why a wholesale slaughter, such as that at Steglitz in Germany, has not already occurred. These roads are selected simply on account of the number of their tracks, and yet the degree of danger depends not so much on the number of tracks as on the amount of business. There are several stations in the vicinity of Boston on two-track roads, at which the work of furnishing safe means for crossing the tracks and of preventing crossing on a level ought to be begun at once. At some of these, a curve in the railroad near the station aids in cutting off a view of an approaching train. With the increase of traffic the conditions are steadily becoming more serious.

In the last annual report (page 35) attention was called to this subject. The warning there given is renewed. The business of the roads in the vicinity of Boston has outgrown their present arrangements. The communications in the appendix show what experience has taught in England and Germany, and the heliotypes and diagrams indicate, more clearly than is possible by description, the admirable arrangement at various important stations in Germany. Fences between tracks at way stations are gradually coming into use in the United States; but, as yet, many of the examples are incomplete and unsatisfactory.

III. Grade Crossings.

The dangers attendant upon grade crossings, and the means of avoiding such dangers, have been year after year considered in these reports. Last year the Board called attention to various features of the subject, and as an outgrowth of its report, — especially of that portion which related to the excessively dangerous public crossings of the four tracks of the Boston & Albany Railroad in the city of Newton, — a Resolve was passed providing for the appointment of a special commission of three civil engineers, to investigate and report to the present Legislature upon the gradual abolition of public grade crossings. Their report will undoubtedly be of great interest and value.

Grade crossings are of two kinds, — private and public.

Private Grade Crossings.

The right to a private grade crossing may be founded either upon prescription, upon an order of the county commissioners, or upon contract.

In the case of Turner *v.* Fitchburg (145 Mass. 433) it was held that, notwithstanding the fact that by our Statutes trespassing on the location of a railroad is punishable by fine, a right of way on the location of a railroad may be acquired by prescription. (See also Fisher *v.* New York & New England Railroad, 137 Mass. 105.) Hence, if a man or a number of men, without right, but openly, continue for twenty years to cross the location of a railroad at a given point, at the end of that time a legal right to cross at that place will have been acquired, such right being based upon the presumption that people have a right to pass where they have passed for a period of twenty years without prevention. These easements, acquired by prescription, are now rapidly growing to maturity; and the companies are discovering that, without their permission or actual knowledge, people on various portions of their lines have been crossing their tracks, in violation of law, for twenty years, and that such persons are now no longer trespassers, but have acquired a right to the easement.

In Germany, as appears from Professor Goering's communication, a right of way on a railroad location cannot be

acquired by trespassers. The Board recommends the passage of a law providing that no rights of way across or on the locations of railroad shall hereafter be acquired by prescription.

The exact number of private ways founded on contract or the order of the county commissioners is not known. There are probably more than five thousand in the Commonwealth. At first they hardly attracted any attention. The owner of a farm or of any piece of land which was cut in two by the railroad, as a matter of convenience to him and as a saving of expense to the railroad, was permitted to have a private way across the track, to connect the two portions of his land. Many of these ways were originally used simply for sledding wood. Afterwards they became farm ways, and, as the land becomes more and more cultivated, they are more and more used. In the vicinity of cities, where the adjoining land has been laid out in house-lots, they are much travelled over, and have in them the same elements of danger as public ways.

When these private ways are very little used, they are generally provided with gates or bars, which are at times closed. As the number of persons entitled to use the way increases, the gate is more frequently left open or the bars left down, until finally the gates or bars disappear altogether, and the crossing, to all appearances, becomes an unprotected public grade crossing.

By P. S., chapter 112, section 200, it is provided, that "whoever enters upon or crosses a railroad or private way which is closed by gates or bars, and neglects to close them securely, shall forfeit for each offence not less than two nor more than ten dollars, and shall be liable for any damage resulting therefrom."

There is, however, no requirement that gates or bars shall be maintained across private grade crossings. Chapter 112, section 115, requires every railroad corporation "to maintain suitable fences, with convenient bars, gates or openings therein, upon both sides of the entire length of its railroad, except at the crossings of a highway or other way," etc.

Under this phraseology, a railroad corporation would be justified in leaving unprotected openings at private crossings. If the companies were obliged by law to put up gates or bars, and if the law imposing a penalty for neglecting to close the

gates or bars was enforced, some of the dangers attendant upon private grade crossings would be avoided.

The special railroad police force, the organization of which has hereinbefore been recommended, would be of value in securing a compliance with the suggested law requiring the erection of gates or bars, and also with the existing law imposing a penalty for leaving the gates or bars open.

There is now no provision of law to facilitate the separation of grades at these private ways. Only by an agreement between the railroad company and the owner of the land can the grades be separated. Only by such agreement can private crossings be abolished. As stated in the last annual report, provision ought to be made so that a company may at its own expense separate grades at private crossings, or abolish any such crossing, furnishing a substitute way, if necessary; in either case compensating the owner of the right of way for all damages which he may suffer. Upon this point, the laws of the State of Connecticut are instructive. (See sections 3481, 3482.)

So far as the reports show, one person only was killed and three persons injured, the past year, at private crossings. It is probable, however, that some of the accidents classified under "Accidents at highway grade crossings" happened at crossings which were in reality private crossings, although having all the outward semblance of public ways. These private crossings are a growing element of danger, especially to the train service. A load of wood or a heavy farm wagon is an excessively dangerous thing to find upon the track.

In the last annual report of the Boston & Albany Railroad Company is the following: "The private ways and farm crossings are even more dangerous in proportion to their use than the public roads; but there is absolutely no process of law by which they can be discontinued, or the level crossings changed. There are 357 of these on the main line. Many of them were, no doubt, at the time they were laid, essential for convenient access to land divided by the railroad. Now much of this land is accessible from the public roads, and the private ways are no longer necessary. The directors are of the opinion that the company should petition the Legislature for authority to take private ways in the same way that land is now taken, or by some other method which will afford ample protection to private rights."

Public Grade Crossings.

From returns made by the various companies, it appears that there are 2,229 highway grade crossings in the State. In the report made in 1873, the number of grade crossings was reported as 2,228. This number rapidly increased until 1877, when the returns gave the total number of grade crossings as 2,776. The report made in 1878, however, gave the number as 2,245, being 531 less than the preceding year. This was not an actual decrease, but was due largely to eliminating from the list disused and private ways. In the report made in 1879 the number was given as 2,043; and in 1880, 2,151. Since that time more new crossings have been created than have been abolished. The returns for the past year show a net increase of 78 since 1880.

It is probable that these figures are not accurate, largely owing to the difficulty of determining whether a way is in fact a public or a private way. The number of highway grade crossings, as now given, is, however, sufficiently accurate for all practical purposes.

The number of existing grade crossings reported this year is 101 more than the number given in the last report. This apparent increase is largely due to the making of more accurate returns. The increase is also in part accounted for by the fact that the crossings on the Chatham Railroad and on that portion of the Massachusetts Central Railroad which was opened during the year, appear now for the first time in the returns, although authorized in previous years. The number of grade crossings actually authorized during the year has been twenty. Of these, nine were on the Grafton & Upton Railroad; one was in Winthrop, on the B. W. & S. R. R.; one was to secure a Y for the freight yard of the Old Colony at Mansfield; one was across Brookline Avenue in Boston, for the temporary use of the Boston & Albany for gravel trains; and eight were for use as freight tracks to factories, granaries and storehouses. The reasons for allowing the above crossings at grade will be given in that portion of the report relating to the creation of grade crossings. The returns show that during the year nine grade crossings have been abolished.

It is unnecessary to go into a careful examination of the law

in regard to the establishment of grade crossings at different periods in the history of our railroads. For the purposes of the present inquiry, it may be presumed that the existing grade crossings have been created under the authority of the Legislature, and subject to such limitations as it has from time to time seen fit to impose.

When the main lines of railroads were built in this State, the problem was a somewhat different one from that which presented itself in England and on the Continent. There, the districts through which the railroads were to run were comparatively thickly settled. There was greater immediate necessity for avoiding grade crossings, and the prospective earnings of the roads were such as to justify a larger expenditure than could have been profitably incurred in a district such as the interior of our State was, from forty to sixty years ago. After the feasibility of the transportation of passengers and freight by railroad was demonstrated, the next question was, whether it would pay; and, in determining this question, the original cost of construction was a most important item. It is probable that the building of our roads, and the consequent growth and prosperity of our State, would have been retarded many years if the Legislature, in the infancy of railroads, foreseeing the difficulties which now beset us, had legislated for the benefit of this generation rather than for their own.

In considering the evils attendant upon grade crossings, and the means of avoiding them, it must therefore be borne in mind that the existence of grade crossings is not due, as a rule, to any blindness on the part of the railroad corporations, much less to any intentional fault of theirs, but rather to circumstances which they could not control, and which were appreciated by the public; so that the existing grade crossings not only were created by authority of, and with the sanction of, the Legislature, but, generally, were also created in accordance with the wishes of the vicinage.

The history of the creation of grade crossings fifty years ago has its counterpart to-day when the building of a new road is proposed. The profitableness of the road is generally questionable. It is projected to furnish facilities to a promising district, in the hope that it will develop the district. Frequently the stock of the company is subscribed for by the people along

the proposed route; and these people, being anxious that the actual cost of their road should be as low as possible, are the very ones who pray for grade crossings, — urging, with facts to back them, that the road cannot be built, if grade crossings are not permitted.

Even those people living along the line, who are not subscribers to the stock, in their gratification at the prospect of railroad facilities, heartily second any efforts on the part of the corporation to secure permission for crossings at grade.

The report of 1880 contains this expression in regard to grade crossings: "All men conversant with railroads deprecate the increase, and even the existence, of these nuisances; and, in general, the community agrees with them, but in each special application a different feeling is shown. Then, the expense of an overhead crossing by the highway, with the unsightliness of the structure and the wear of 'horse flesh,' or the inconvenience of a depressed way, with its injury to adjoining property, is urged against all considerations of safety. Each citizen is confident that no accident will happen to him or to his family; while many residents in the locality interested, fear some immediate injury from any other mode of crossing than at grade."

The accidents caused by grade crossings may be divided into two classes: first, those happening immediately at the crossing; and second, those remotely the result of such crossings, — such as accidents to trespassers, and many of the accidents at stations. Only those in the first class are enumerated in these reports under the head of accidents at grade crossings. The number of these accidents, as reported for the year ending Sept. 30, 1873, was 7; 1874, 36; 1875, 18; 1876, 38; 1877, 33; 1878, 29; 1879, 30; 1880, 50; 1881, 36; 1882, 54; 1883, 44; 1884, 32; 1885, 50; 1886, 35; 1887, 47; 1888, 59.

During the past year the number of fatal accidents was 27, and the number not fatal 32. During the last ten years the average number killed has been 18, the average number injured 25; total, 43.

The average number of accidents in the years 1873–74–75 was 20. The average number of accidents in the years 1886–87–88 was 47. This increase is greater than the increase of train mileage, which, during the three years last named, was about double that of the three years first named. The excess,

however, is more than accounted for by the increase of traffic on the railroads, plus the increase of travel on the highways. Taking highway travel into consideration, it appears that the grade crossings must, on the whole, be better protected than they were fifteen years ago.

Of the 2,229 grade crossings, 1,374, or 62 per cent., are unprotected by gates or flagmen; and 855, or 38 per cent., are protected. The proportion of those which are protected has been gradually increasing of late years. In 1875 it was 20 per cent., in 1886 34 per cent., and in 1887 36 per cent., of the whole number.

In 1887 the percentage of accidents at grade crossings protected by gates or flagmen to the whole number of grade-crossing accidents was a trifle more than the percentage of protected crossings to the whole number of crossings. In 1888, however, 38 per cent. of the whole number of crossings being protected, 61 per cent. of the total number of accidents happened at such crossings. This by no means shows that the presence of a flagman or the use of gates is an added source of danger, because it is admitted on all sides that the reverse is true. The excess is due to the fact that at the protected crossings the opportunities for accidents are many times greater than at the unprotected crossings, owing to the larger amount of travel both on the railroad and on the highway. If such crossings were not protected at all, the number of accidents at them would be terribly increased.

The Elements of Danger at Unprotected Grade Crossings.

The degree of danger at unprotected grade crossings depends principally upon the following particulars: —

First. The number of tracks and the speed at which trains are run. Take first the case of a single track. The width of a car, and consequently the space occupied by it in passing, is, in round numbers, ten feet. A fair average length for a team is twenty feet, and the driver is generally about midway between his horses' heads and the rear end of his wagon. When, therefore, the horses' heads are twenty feet from the danger line, — that is, the line which the side of the car describes in passing, — the driver is thirty feet from such line, and

the rear of his wagon forty feet therefrom; and it would be necessary for the team to travel said forty feet plus ten feet, or fifty feet in all, to clear a single-track railroad. While a team walking at the rate of three miles an hour is going fifty feet, a train of cars going at the rate of thirty miles an hour would go five hundred feet, and a train going sixty miles an hour would go one thousand feet. If, therefore, at the time when the horses reach a point twenty feet from the danger line, a train is within five hundred feet of the crossing, and the team proceeds at the rate of three miles an hour and the train at the rate of thirty miles an hour, there will be a collision. There would be a collision if the train were within one thousand feet of the crossing, and proceeded at the rate of sixty miles an hour. Each additional track adds about twelve feet to the distance to be travelled by a team; so that, for a two-track road, in the cases which have been supposed, the figures would be increased from five hundred to six hundred and twenty feet and from one thousand to 1,240 feet. It takes a little less than twelve seconds to go fifty feet, at the rate of three miles an hour.

The law requires that the engine bell shall be rung or the whistle sounded eighty rods, or 1,320 feet, from the crossing.

The fact that the speed of trains is not uniform further increases the danger. Some trains go at the rate of fifteen miles an hour, others at the rate of thirty miles an hour, and others at times at the rate of sixty miles an hour, so that a person who crosses a track in safety at one time, is not justified in the natural inference that he can cross safely at all times, provided only that the train appears to be no nearer.

Two tracks at a single crossing combine much more of danger than two crossings of a single track, supposing the amount of travel on the tracks, and other elements, to be equal. This is partly due to the fact that people when watching one train are apt to overlook the possibility that another train may happen to pass at the same time on the other track, in the opposite direction, and partly to the fact that the view of such second train is always more or less obstructed. This danger is specially great after the passage of a freight-train, for the reason that it makes a great deal of noise, and passes slowly, so that a passenger-train on the other track, running at a high rate of speed, although perhaps a mile

away when the freight-train begins to pass, may without being heard reach the crossing at about the time the rear of the freight-train leaves it.

The foregoing considerations show that the wonder is not that so many are killed, but that so few are killed at unprotected crossings where trains are run at high rates of speed.

It is obvious that the danger rapidly decreases as the speed of trains is decreased. Thus, if a train were going only fifteen miles an hour, the team, under the circumstances above supposed, would be safe if in the case of a single-track road the train was more than two hundred and fifty feet away, or, in case of a double-track road, more than three hundred and ten feet away.

Second. The number of trains.

Third. The number of vehicles and pedestrians on the highway, and the character of the traffic thereon.

Fourth. The character of the approach to the railroad by the highway; that is, whether the highway approaches the railroad on a level, or ascends or descends to it. An approach on a level is the safest.

Fifth. The view of the railroad from the highway. The more perfect and the more extensive the view, the less the danger. The highway should cross the railroad at a right angle. The greater the deviation from a right angle, the greater the danger, because a line crossing the railroad diagonally is longer than a line across a railroad at right angles, and because, also, while a person at a diagonal crossing gets a better view of the railroad in one direction, he gets a correspondingly poorer and more difficult view of the railroad in the other direction.

Obstructions to the view are a frequent and often unnecessary source of danger. These obstructions may be trees, bushes, buildings or elevated land bordering upon or near the highway, or the view may be interfered with by a curve in the railroad near the crossing.

The Means by which the Danger at Grade Crossings may be Diminished.

Grade crossings may be made less dangerous in the following ways: —

First. By reducing the speed of trains. This cannot be done on any main line with due regard to furnishing proper facilities; but it is a limitation which can be applied to branch lines, and which should be applied to any new road as a uniform and necessary restriction wherever there is an unprotected grade crossing.

Professor Goering's communication is very instructive upon this point. In Germany all roads on which the speed of trains is not limited are obliged to protect each crossing by gates; but where unprotected grade crossings are permitted, the speed of trains is invariably limited.

Second. If a highway crosses the railroad diagonally, or is not level, it can be rendered less dangerous by altering it so that it shall cross at a right angle. The way on either side of the crossing, for at least one hundred feet, should be level, and the lines of the way and of the railroad should form a right angle. By P. S., chapter 112, section 129, etc., provision is made for carrying out alterations to produce this result.

Third. The danger can be lessened by removing trees, bushes, rocks or banks which obstruct the view.

There is no provision of statute by which a railroad corporation can take, or even enter upon, land adjoining the railroad at a crossing for the purpose of removing trees, bushes, embankments or other obstructions interfering with a view of the track. If the authority given to railroad companies to take land were extended to the taking of lands for such purposes, subject to the approval of the county commissioners, and within such limits as said commissioners might prescribe with reference to each crossing, a great many crossings could at a trifling cost be made safer than at present. The Mill River crossing near Woonsocket Junction, where two ladies lost their lives during the past year, and the crossing at West Barnstable, where two persons were killed and two seriously injured, are cases in point, since an excellent view of the track could in each case be obtained simply by cutting down a few bushes or small trees.

Fourth. The danger at a grade crossing may be lessened by the use of electric signals. By Statutes 1888, chapter 240, it was provided that the Board of Railroad Commissioners may order an electric signal or signals at a crossing, if they decide that better security of human life or the convenience of the public travel requires it. When such signals are working properly, they are useful as a warning to the careful traveller. When they are not working, they may prove to be a snare. They are but little used in this State, except at crossings where there is a gate or flagman; and where, by reason of a curve in the road, the view of an approaching train is obstructed.

Fifth. The most effective way of protecting a grade crossing is by the use of gates or a flagman; and yet, as has been seen, during the past year the accidents at grade crossings protected by gates or flagmen have been 61 per cent. of the whole number. These accidents are due to a variety of causes.

Sometimes the gateman or flagman is negligent. The faithfulness of gatemen or flagmen, however, is remarkable. Sometimes the gateman or flagman miscalculates the speed at which a train is coming, and does not close the gate or give his warning in season. Sometimes a runaway or stray team gets upon the track. The foregoing are of comparatively rare occurrence.

A more frequent cause of accident is one which has several times been discussed in the reports of the Board; and the opinion is again expressed, that a crossing, if protected at any time by a gate or by a flagman, should be protected whenever an engine or train passes, day or night, since many sad accidents have proved that crossings protected in the daytime, but not protected at night, are snares, especially for those persons who happen to have passed over them in the daytime, and who assume that the protection is continued at night. Crossings are protected by gates or flagmen, either by the voluntary action of the railroad company, or in pursuance of an order either of the county commissioners or of the railroad commissioners.

The county commissioners, under chapter 112, section 166, apparently have authority to order protection for a portion only of the time, since they are given power to make such orders

for the erection or maintenance of gates or bars, or the stationing of an agent or flagman, or such alteration of arrangements already existing at a crossing, as they shall decide that the better security of human life or the convenience of the public travel requires. The authority of the Board of Railroad Commissioners, however (Statutes 1883, chapter 117; Statutes 1888, chapter 240), is limited to directing in writing that gates shall be erected, and that an agent be stationed to open and close such gates *when* an engine or train passes, or that a flagman be stationed at the crossing, to display a flag *whenever* an engine or a train passes. It is doubtful, therefore, whether an order of this Board, requiring a railroad company to protect a crossing only in the daytime, would be valid.

By far the largest class of accidents at protected grade crossings are those which happen in consequence of a disregard of the warning given by the closed gates or the waving of the flag. During the past year the accidents of this class have been 42 per cent. of all the accidents at grade crossings, whether protected or unprotected; and they have been 70 per cent. of all the accidents happening at protected grade crossings. People walk under or around the gates when they are closed, wait for one train to pass, and then walk along and are struck by a train on another track. Sometimes, in their eagerness to save a minute's delay, or for the purpose of catching a train standing at a neighboring station, they are killed in an attempt to cross the track in front of a train which they see approaching. Sometimes, especially in the night, the gate or the flagman is not seen, and teams drive through the one or by the other.

The question now arises, whether the gates and flagmen can be made more efficient than they have been in the past; whether the accidents which now occur at protected crossings are necessary incidentals to grade crossings, or whether some of them can be prevented.

The following table, in relation to grade crossings and accidents thereat in Massachusetts, is made up on the same basis as that embodied in Professor Goering's report, except that the Massachusetts statistics embrace only accidents in which a person was injured or killed, whereas the German statistics give the total number of accidents at such crossings, whether any

person was injured or not. The two tables afford, therefore, a good ground for comparison only in relation to the number of those killed and injured. The returns for Germany are for the year 1887; those for Massachusetts for the year 1888.

Number of protected grade crossings in Massachusetts, 855. Total accidents at such crossings, 36. Fatal, 16; not fatal, 20.
One accident to 23.75 protected grade crossings.
One killed to 53.44 protected grade crossings.
One injured to 42.75 protected grade crossings.

Number of unprotected grade crossings, 1,374. Total accidents at such crossings, 23. Fatal, 11; not fatal, 12.
One accident to 59.74 unprotected grade crossings.
One killed to 124.91 unprotected grade crossings.
One injured to 114.50 unprotected grade crossings.

Total number of grade crossings, 2,229. Total accidents at all crossings, 59. Fatal, 27; not fatal, 32.
One accident to 37.78 grade crossings.
One killed to 82.56 grade crossings.
One injured to 69.65 grade crossings.

Total miles operated in State, 2,064.
One grade crossing accident to 35 miles.
One fatal to 76 miles.

Total miles operated, 2,064.
Total train miles, 42,494,669.
$\frac{42,494,699}{2064} = 20,588$ trains.

20,588 trains $\times$ by 2,229 grade crossings $= 45,890,652$ train grade crossings.
One accident to 720,248 train miles.
One killed to 1,573,877 train miles.
One injured to 1,327,958 train miles.
One accident to 777,807 train grade crossings.
One killed to 1,699,653 train grade crossings.
One injured to 1,434,083 train grade crossings.

	Million Train Miles.	Million Train Grade Crossings.
One accident to	0.720	0 778
One killed to	1.574	1.699
One injured to	1.328	1.434

In Germany there was one death at a grade crossing to every 25.86 million train miles, and in Massachusetts one death to every 1.57 million train miles; or, in other words, reckoned with reference to train miles, about seventeen times as many in Massachusetts as in Germany. In Germany, besides those killed, one person was injured to each 5.01 million train miles,

while in Massachusetts one person was injured to 1.33 million train miles, or 3.7 times as many. Reckoned by the number of train grade crossings, there was in Germany one person killed to 57.43 million train grade crossings, and in Massachusetts one to 1.69 million train grade crossings, or 34 times as many in Massachusetts as in Germany. There was one person injured in Germany to 11.11 million train grade crossings, and in Massachusetts one person injured to 1.43 million train grade crossings, or 7.7 times as many.

The total number of killed and injured at grade crossings in Germany averaged one to 4.19 million train miles, and in Massachusetts one to 0.72 million train miles; or 5.8 times as many in Massachusetts as in Germany. In Germany, also, the number of killed and injured together averaged one to each 9.31 million train grade crossings, and in Massachusetts one to 0.778 million train grade crossings; or 12 times as many in Massachusetts as in Germany.

It becomes important, therefore, to examine the German system, to see what precautions they adopt at grade crossings, of which, as has been stated, there are in Germany about twice as many per mile of track as in Massachusetts. If the total number of killed and injured at grade crossings in Massachusetts during the past year, instead of being 59, had been 4 or 5, the average of Massachusetts per million train grade crossings would have been about the same as that in Germany. Such an enormous saving demands careful consideration of the means adopted in Germany for the protection of the public.

There are two conspicuous features of the German system. One is, that, on the primary roads, — that is, on those roads on which the speed of trains is not limited, — all grade crossings are required to be protected by strong and easily visible gates, and only on the secondary roads, — namely, those on which the speed of trains is limited, — are unprotected crossings permitted. This distinction between the primary and secondary roads is a wise one. The danger at an unprotected crossing from a train passing at the rate of twelve miles an hour is very small, while the danger from a train passing at three or four times that speed is much more than three or four times as great.

The other feature of the German system is, that stringent regulations are made and enforced, in regard to passing on to the track when the gates are closed.

By section 54 of the Railroad Police Regulations, "the public is forbidden to cross the tracks except at crossings and when the gates are open. At crossings with turnstiles or automatic gates, the tracks must not be crossed when a train is in sight."

Section 59 is as follows: —

When the gates at a grade crossing are closed, or when the bell is ringing, all vehicles or animals on the highway must be brought to a stop at the sign-post. Pedestrians may come up to the gates, but are not allowed to open them.

SECTION 62. Any infringement of these regulations is punishable by a fine not exceeding 100 marks ($25), except in cases where the law provides for a more severe penalty.

SECTION 63. All railroad employees belonging to the Railroad Police have authority to arrest anybody who infringes rules.

Almost all employees belong to the Railroad Police.

SECTION 65. A copy of these rules must be posted in every waiting-room, and there must further be at each station a book in which the public may enter complaints.

SECTION 72. The execution of the foregoing rules for the safety of traffic is entrusted to the management of the railroad, and to the local government Boards.

In Germany, a traveller on the highway does not think of passing the closed gates, because he knows that an arrest is pretty sure to be the consequence.

The statistics and the regulations in Germany indicate strongly that the number of accidents at grade crossings in Massachusetts can be materially diminished, without a separation of grades, by requiring the crossings to be more generally protected by gates, which shall close both the driveway and the footway; by making it a punishable offence to pass under, over or around gates when they are closed, and by taking effective measures to enforce the law.

This regulation is therefore important not only to prevent trespassing, as has been shown, but also to prevent accidents at grade crossings. If during the past year people had been prevented from crossing the tracks when the gates were closed, and when a flagman was signalling danger, two-thirds of all the accidents at protected grade crossings would have been avoided.

It will not be sufficient simply to have the regular railroad employees vested with the powers of police officers. As has been stated, a gateman or a flagman cannot leave his gate to

make an arrest. He can, and should when possible, take the names of offenders; but even then it would be a serious danger to the public to have the regular gateman or flagman frequently off duty giving testimony in court.

Primarily, the regulations should be enforced by the municipal police. The special force of State police, the creation of which has been recommended for the purpose of putting a stop to walking on the tracks, can aid in enforcing the law. Before any attempt to enforce the law is made, the public should be warned, by placing on each side of crossings protected by gates or flagmen suitable notices of the regulations and penalty. It is believed that a small penalty, enforced persistently, would soon practically put a stop to the crossing of railroad tracks when the gates are closed, or when the flagman is waving his flag as a signal of danger.

The Abolition of Grade Crossings.

In the preceding pages it has been shown that grade crossings are responsible not only for the accidents which happen at the crossings, but that they are also largely responsible for the accidents to trespassers and for many of the accidents at stations; and that, while the number of accidents directly or indirectly resulting from grade crossings may be considerably reduced by better means of protection and by more stringent and more thoroughly enforced regulations, the crossings will still stand charged with frequent accidents to trespassers and to travellers on the highways, with occasional accidents to the train service, with large expense to the railroad companies covering the cost of maintaining gates and flagmen, damages for personal injuries and legal expenses, with the whistling nuisance, and in cities and large towns with great waste due to the interruption of traffic. The more adequately the crossings are protected by gates, the greater is the interruption to traffic.

This interruption to traffic in some places has already become so great as to demand relief. The railroads are blocking the prosperity which they themselves have been a chief element in creating. The blockade increases with the increase of traffic on the railroad and with the increase of traffic on the highway, and, in fact, may be said to increase with the increase

of the railroad traffic, multiplied by the increase of highway traffic. It is generally greatest in the vicinity of important stations or freight yards, where it is largely and sometimes unnecessarily increased by the making up of trains. Public Statutes, chapter 112, section 169, prohibits the occupation of a crossing unnecessarily for more than five minutes at a time, and Statutes of 1885, chapter 110, gives authority to the railroad commissioners to regulate the use of crossings by freight trains, and in connection therewith to order such changes in the tracks in the proximity of crossings as they may deem necessary.

In Connecticut the provision of law on this subject is wider in its scope. It is as follows: —

Section 3492. The railroad commissioners are empowered and authorized to order any railroad company not to use, for switching purposes nor for standing trains of any kind, such portions of its tracks upon or across any street or highway as in their opinion the public convenience requires should not be so used, and may limit the number of tracks other than main tracks which a railroad company may lay upon or across the public street or highway for side tracks or for switching purposes, and may order a railroad company to remove such of the side tracks or switching tracks now laid upon or across any public street or highway as the commissioners may deem public convenience or safety requires should be removed.

In spite of the enormous increase in the cost of separating grades, due to the erection of valuable buildings in the vicinity of crossings, it has been the experience in other countries, and it is to be our experience here, that the interruption to traffic on important thoroughfares in the largest cities, especially near stations, finally becomes unbearable, and compels a separation of grades. In Germany grade crossings near stations are now seldom found. Their abolition has been an important feature of the great station improvements lately undertaken. In Professor Goering's article a list is given of six stations now in process of construction, the estimated cost of which is over sixteen million dollars.

No two crossings are exactly alike; and there is no crossing in the State at which the grades cannot be separated. With reference to each crossing, considerations peculiar to it affect the question whether humanity or public or railroad economy demands that the work of separating grades should be done or should be postponed. The parties interested are the public and the railroad corporations.

Prior to 1872 the law contemplated that railroad corporations should pay all expenses incurred in separating grades. But in 1872 provision was made for an equitable apportionment of the expense between the railroad company and the cities, towns and counties interested. Since that time numerous amendments of detail have been adopted, some of them having been passed since the revision of 1882.

In order to place the law as it now stands in a convenient form before the Legislature, sections 129 to 136, inclusive, of chapter 112 of the Public Statutes, with the various amendments thereof, are printed in a consolidated form in Appendix L.

In brief, the method of procedure is as follows: Upon petition of the mayor and aldermen of a city or the selectmen of a town in which a public grade crossing is situated, or of the directors of a railroad corporation, setting forth that they are of the opinion that it is necessary for the security or convenience of the public that the grades should be separated, the county commissioners, or, in the city of Boston, the railroad commissioners, are required to give a hearing, and, if they decide that a separation of grades is necessary, to prescribe the manner and limits within which it shall be made. Similar proceedings may be instituted upon a petition signed by not less than twenty legal voters in the county in which the crossing is situated; but in such case the county commissioners cannot order a separation unless they are of opinion that the cost will not exceed three thousand dollars.

If the county commissioners, after hearing, unreasonably refuse or neglect to announce their decision, or if their decision is adverse to a separation of grades, any party aggrieved may appeal to the Board of Railroad Commissioners.

If the county commissioners decide that the location of the railroad or of the highway or townway shall be changed, land or other property may be taken therefor and damages may be assessed, as in the case of land taken by railroad corporations for highways or townways. If the county commissioners order a separation of grades, a special commission of three persons, two of them selected by the superior court and one a member of the Board of Railroad Commissioners and selected by it, is appointed, with authority to determine which

party shall carry into effect the decision of the county commissioners, and which party shall pay the expense thereof and the future charges for keeping the crossing and the approaches thereto in repair, as well as the cost of the application to the county commissioners and of the hearing before the special commission. The said special commission may apportion such expenses, charges and costs between the railroad corporation and the towns, cities or counties in which the crossing is situated, and other towns and cities specially benefited, as to the commission may seem just.

A party aggrieved by such award may apply to the court for a trial by jury to revise and determine any matter of fact found therein. The decree of the court upon the award or upon the verdict of the jury is final and binding, and the court has jurisdiction, in equity, to compel compliance therewith. The provisions of law relating to betterments on account of public improvements are applicable to separations of grade.

Running all through these provisions the intent to insure equity is prominent. The law proceeds on the assumption that, generally, it is not best to attempt to secure a separation of grades at any crossing unless either the railroad or the city or town in which the crossing is situated desires a separation. It is probable that if a commission should be vested with power to require separations of grade without preliminary petition, it would not long be permitted to act if it should to any extent require grade crossings to be abolished in cases where both the cities or towns interested and the railroad company were opposed.

Some reluctance to take the initiative has existed on the part of the cities or towns, and of railroad corporations, owing to the fear lest the special commission, appointed to apportion the expense, would lay too heavy a share upon the petitioner. It is probable, however, that this difficulty is more imaginary than real, and that it will not in the future be so serious an obstacle as in the past. To meet this difficulty the limitation of cost imposed, when proceedings are instituted by petition of twenty citizens, might be removed, so that jurisdiction to separate the grades at any crossing might be founded upon such a petition.

The county commissioners were naturally selected as the

Board to decide whether a separation of grades is necessary, because the care of the highways is an important part of their duties. It is claimed, however, that their official relations with the cities and towns are such that they are not a disinterested Board, and consequently that they will be exposed to the suspicion that their judgment has been warped whenever their decision accords with the wishes of the city or town authorities.

The provision for an appeal to the Board of Railroad Commissioners, in case the county commissioners refuse to order a separation of grades, gives the party who favors a separation two chances to secure it, while the party who opposes a separation, if defeated before the county commissioners, has no appeal.

To revise the decision of the county commissioners is such an ungracious task that this Board would be glad to be relieved of the duty. Thus far, only one appeal from the county commissioners has been taken, and that appeal is now pending. It is probable that other appeals would have been taken had it not been generally understood that by Statutes of 1885, chapter 194, the right of appeal to the Board of Railroad Commissioners was entirely taken away, whereas, in fact it was taken away when the county commissioners order a separation of grade, but not when they refuse to order such separation.

The provision in regard to the appointment of a special commission of three disinterested persons, two appointed by the superior court and one a member of the Board of Railroad Commissioners and selected by it, to apportion the expense, etc., was also conceived in the interest of justice.

If the principle of apportionment is to be carried out, the county commissioners cannot properly make the apportionment, since their official relations plainly disqualify them for that service.

The principle of apportionment is supported by the Board of Railroad Commissioners of the State of New York. The following is an extract from their report in the case of the petition of the city of Buffalo for relief from the inconveniences and dangers of grade crossings : —

> The fair division of the expense of changing grade crossings is the most troublesome question involved in these cases. At some crossings railroads ought to bear the whole expense, as, for instance, where they have needlessly and recklessly constructed their roads at grade when over or under crossings

were practicable at little extra expense. At other places it would not be unjust to impose upon towns a large part of the expense, as, for example, upon the Lockport Branch of the New York Central, where it is asserted that grade crossings were insisted upon after abutments for overhead bridges had been built. In cities, it is the growth of railroad business that creates the difficulty, and hence when a change becomes necessary to relieve the street, the railroad ought to pay the most of the expense. On the other hand, cities are justly liable for a portion of the expense of carrying out some proper plan of relief, because, first, they have invited, or at least without protest have permitted, railroads to expend vast sums upon the grade crossings and the rail systems adapted thereto, and in the change this amount becomes a loss; second, the people and their business can well afford to pay something to be relieved from a burden partially self-imposed; third, when tracks are elevated or depressed, the city and its people become reinvested with the exclusive right to the street, and the railroad surrenders such rights as it had acquired under the consent given to it to lay rails in the street and to use them.

In the annual report for this year of the Connecticut Commissioners occurs the following: —

The managers of the New York, New Haven & Hartford Railroad insist that it would be better to have a fixed, unvarying rule of apportionment, and favor the making of it upon the basis of priority of construction. The railroad would pay the entire expense when the highway was first constructed, and the town in cases where the railroad was built first. * * * If the expense was to be apportioned on this basis it would place a somewhat greater amount on the companies, as a whole, than the average of our assessments on the New York, New Haven & Hartford Railroad. Such an apportionment would have this in its favor: That, as a rule, the less growing and prosperous towns would have nothing to pay, while the more thriving and, therefore, better able towns would pay a greater proportion than we have assessed in cases where an elimination of all the crossings in the town has to be done practically at the same time. * * * A fixed rule of apportionment, upon whatever basis it should be made, would, of course, be a great relief to the Commissioners, but we cannot recommend the adoption of any rule of that character. Our experience, particularly for the past two years, has satisfied us that such a rule would be more likely to work unfairly in the State at large than the present law, which permits the Commissioners to consider all the circumstances of each particular case, and then allows an appeal from our decisions to the superior court, with the further opportunity to have the judgments of that court reviewed by the Supreme Court.

Since the first of June, 1887, the Railroad Commissioners of Connecticut have ordered a separation of grades at sixty-one crossings at an estimated cost of $443,000, or an average cost of $7,272, and the total amount apportioned to the towns has been $49,000, or between twelve and thirteen per cent. of the whole.

We concur with the Commissioners of the States of Connecticut and New York, that strict equity requires some provision for apportionment. Though a fixed percentage might be determined upon, which would work with substantial equity taking all crossings into consideration, it might work great injustice in the case of such crossings as it happened to be applied to, and there would be a temptation for the cities and towns on the one hand, and the railroads on the other, to petition for a separation of grades at those crossings where the benefit received by them would be greater then their fixed proportion of the expense. So, also, if it were provided, as suggested by the officers of the New York, New Haven & Hartford Railroad, that in the case of ahighway laid out before the railroad the railroad shall pay all the expense, and in the case of a highway laid out subsequently to the building of the railroad, the cities, towns, or the State, should pay all the expense, it would seem natural to expect that the railroad would petition for a separation in all cases where the whole burden would fall on the towns, and the towns would petition for a separation where the whole burden would fall upon the railroads. Should the whole burden be thrown upon the railroad companies, the towns and counties would have no inducement to facilitate the work by discontinuing unnecessary ways, or by combining two or more adjacent ways into a single crossing, and there would naturally be greater opposition to any proposition looking to a change of the grade or of the location of a highway. The result would be that the cost of separating grades would be largely increased, and progress correspondingly delayed.

The wisdom of providing for an apportionment, depending upon the circumstances of each particular case, seems therefore to be well supported.

A principal objection to our laws in relation to separation of grades is, that in the attempt to insure equity, the procedure has become too complicated, and in case of opposition might be too long protracted. The hearing before the county commissioners, the possible appeal to the Board of Railroad Commissioners, the investigation by the special commission, the possible jury trial to revise and determine matters of fact, are proceedings which individually take much time, and, col-

lectively, in a contested case, might prevent beginning upon the actual work of separating grades for several years.

The question arises, how the proceedings can be simplified, and at the same time give proper protection to all interests. In the State of New York there is no statute provision looking to the abolition of grade crossings.

The Board of Railroad Commissioners for that State have submitted to the Legislature a draft of a law similar to ours, except that the petition is to be presented to the Supreme Court, which is thereupon to appoint three commissioners, one a civil engineer, to decide what, if anything, shall be done, award damages, and determine which party shall carry out the order, and which party shall pay the expense, etc.; or it may apportion the expense.

In Connecticut the authority which in Massachusetts is vested in the county commissioners and in the special commission, is all vested in the Board of Railroad Commissioners. In that State the New York, New Haven & Hartford Railroad has lately taken active measures to secure the abolition of grade crossings. The following is an extract from the report for the past year of its board of directors:

> Some progress has been made in the abolition of grade crossings, but not as much as was hoped. Petitions have been brought by the company for the separations of grade at seventy-five crossings in Connecticut. The Railroad Commissioners, who have original jurisdiction, have passed orders affecting fifty-eight crossings. Work has been undertaken at twenty-two crossings, but it is delayed at twenty-one crossings by appeals to the courts, all taken by the towns. There exist on all the roads operated by the company five hundred and eighty crossings at grade, of which five hundred are in Connecticut.

A consideration of the foregoing, and of the delays which may be encountered under the existing provisions of law in this State, lead to the suggestion that the law be changed so that upon petition by a city or town in which a crossing is situated, or by twenty citizens thereof, or by the railroad company, filed with the superior court, a commission shall be appointed consisting of three persons, one selected by the board of county commissioners from its own members or at large, one selected by the Board of Railroad Commissioners from its own members or at large, and one selected by the railroad company or companies interested. On such a com-

mission the town and county, the railroad company and the public would each be represented, and to it could safely be intrusted the determination, not only as to whether the grades should be separated, but also as to how and by whom the work should be done, and as to the apportionment of the expense. Upon the filing of the decision of the commission with the superior court, that court should have jurisdiction in equity, as provided in Public Statutes, chapter 112, section 133, to enforce the decree; and it might well be deemed unnecessary to allow any appeal from such decision to a jury, except in the matter of the damages awarded for injuries to adjoining estates.

It remains to be considered whether anything besides simplifying the procedure can be done through legislation to facilitate the abolition of grade crossings.

The principal considerations which will influence a railroad company in determining whether a separation of grades at any crossing is desirable, are, on the one hand, the present and the probable future expense attending the crossing, including the pay of flagmen, the care of gates, the possible legal expense and damages growing out of accidents, and the possible danger to traffic on the railroad; and, on the other hand, the cost and the financial condition of the company.

The cost of a flagman per annum is $500 or $600. If a flagman is required night as well as day, the cost will be nearly doubled, or $1,000; and if, as is the case at some crossings, two flagmen or gatemen are required all the time, the cost is again doubled. A railroad in good financial standing can borrow at from four to five per cent. per annum. To such companies, the separation of grades at a crossing where the company is obliged to keep a single gateman or flagman would be a measure of economy if it could be accomplished at a cost to the railroad of not exceeding $10,000; and if a day and night gateman or flagman was required, the company could afford to pay as much as $20,000; if two were required all the time, $40,000. The liability to accident and the damages which a railroad might suffer in consequence thereof, would somewhat increase these figures. There are many crossings in the State at which flagmen or gatemen are now, or soon will be, required, where the grades should be separated as a simple measure of economy, without regard either to convenience or safety.

The principal considerations which will influence a town, will, on the one hand, be the danger to people travelling on the highways, the interruption to traffic and the nuisance occasioned by whistling; and, on the other hand, the cost and the town's financial condition.

In 1887 the Board of Railroad Commissioners of Connecticut submitted to the Legislature of that State a draft of a law, by which the Board was obliged to require not less than two per cent. and not more than five per cent. of all grade crossings to be abolished annually, and by which it was further provided that the railroad company interested should pay thirty per cent. of the expense and three per cent. additional for each one per cent. on the capital stock paid in dividends, and that the balance of the expense should be paid by the State, ten per cent. of the taxes received by the State each year from the railroad companies being set apart as a fund for the purpose. The proposed draft did not become a law.

The railroad companies might be obliged by law to set apart each year a certain percentage of their gross or net earnings, as a fund to be used only for the abolition of grade crossings; but such a requirement would be a severe burden on some of the companies.

Although most of the expense falls upon the railroad companies, they are more anxious than the towns to undertake the work of abolishing grade crossings; and if provision is made so that they can capitalize the expense, there is reason to believe that some of those roads which can issue capital stock to advantage will set a good example without delay. The cash paid in should either be used to pay off debt previously incurred in separating grades, or be reserved as a special fund to defray the expense of future separations.

The general adoption of the train brake on freight trains would facilitate the work of abolishing grade crossings, since the highway need not then be more than fourteen or fifteen feet in the clear above the tracks, and the saving of three or four feet in height would materially diminish the cost.

The Creation of New Crossings at Grade.

The danger, the expense and the delay caused by grade crossings, especially in our cities and large towns, are now so fully realized that the opinion is prevalent that no grade cross-

ing ought hereafter to be created in this State. So far as concerns those roads which now exist, and on which trains are and must be run without limitation of speed, an absolute prohibition against further grade crossings, though it would work hardship in some cases, would, on the whole, do much more good than harm; but the expediency of applying a rule of absolute prohibition to roads still to be built is questionable. Had such a prohibition been enforced in the past, some of the existing roads would never have been built at all. The building of all of them would have been greatly delayed.

During the past year the Board was called upon to approve — and it did approve — of nine grade crossings for the Grafton & Upton road. The community desired that the road should be built. It would not have been built had not grade crossings been permitted. The Board did not feel justified, in consequence of the slight danger incurred at such crossings at grade, in refusing its approval, thereby depriving the community of the railroad facilities which it much desired. In cases like that of the Grafton & Upton road, it is urged that it is proposed to build only a single track road; that two tracks will not be needed for many years, if ever; that no express trains are to be run, and that all trains will be slow trains as compared with those on the main lines; that the business will justify only two or three passenger trains and one or two freight trains each way daily; that the selectmen of the town, after a hearing at which there was practically no objection raised, have approved of the crossings at grade; that the county commissioners, who are familiar with the district, and who have made a careful examination of each crossing, have also given their approval, and have consented to changing the grades of the highways in some cases in order to make a grade crossing possible; that, in fact, all parties interested desire crossings at grade; that the expense of building the road would be increased one-quarter or even one-half if grade crossings should not be permitted; that such increase of expense, added to all the other difficulties and uncertainties, would cause the undertaking to be given up entirely; that it would be unreasonable to refuse approval when there are hundreds of grade crossings on double track roads all over the Commonwealth which are vastly more dangerous than the crossings petitioned

for would ever be; that it would be denying to the weak what the strong are allowed to retain, and putting the poor to an expense which the rich are not obliged to incur, and imposing a burden at present uncalled for and only to be incurred for the benefit of future generations.

In the light of our experience, it seems to be unwise either to prohibit altogether the future creation of grade crossings for new railroads, or to continue to permit their creation without imposing restrictions and regulations as a condition of the grant. The following restrictions are suggested as desirable: —

First. A limitation of speed to ten miles an hour from the whistling post to the crossing. The reason for this limitation has been previously explained.

Second. The number of tracks to be laid should be limited by the order, and additional tracks should not be put in without further authority. It would be well if this limitation could be applied to roads already in existence; but they will probably claim, that, inasmuch as no such limitation was expressed at the time when their grade crossings were granted, they have thereby acquired an equitable right to lay as many tracks as they wish within their location.

Third. As a prerequisite to making use of a new crossing at grade, a railroad corporation should be required to take so much land at said crossing as may be necessary to furnish to the public an unobstructed view of the railroad, and to relieve the company from liability for damages to adjoining estates in case of a future separation of grades.

Fourth. The map and report required by c. 112, § 38, should be made by an engineer approved by this Board, and acting under instructions to locate the route between the proposed termini in such manner as will best avoid grade crossings. Under the law as it now stands, the engineer, with the laudable desire to save expense, generally locates the road and arranges the grades, so that the grades of the railroad and the highway shall coincide as nearly as possible at crossings. It is obvious that grade crossings on a road so located can only be avoided at great cost. The map and report, made as above suggested, will enable the municipal authorities, the county commissioners and the railroad commissioners, to judge more intelligently whether it is reasonable for them to refuse approval of crossings at grade.

Several applications have been made to the Board during the past year for permits to cross highways at grade, in order to secure a railroad for private use for transportation of freight or a spur for public freight purposes. For private tracks it is only necessary to secure the approval of the municipal authorities, unless steam is used. If, however, steam is used, the assent of the county commissioners and the railroad commissioners is required.

A curious anomaly in the law in regard to freight tracks for *private* use is, that if they ask for a grade crossing, and if steam is to be used, the petition cannot be granted unless the county commissioners first adjudge that *public* necessity requires a crossing at the same level.

In some districts, especially where the highways are used principally for teaming, it seems justifiable to authorize a crossing at grade for a private or public freight track, since the use of such a track saves considerable expense in handling, and since the passage of a freight car does not block the street any more than the passage of the teams necessary to carry the same freight would block it.

There should be some provision of law under which this Board, when it permits a crossing at grade for freight purposes, may fix the number of tracks, and limit the speed perhaps to six miles an hour. The Board now has no such authority, and might not be able to interfere successfully, even if a grade crossing granted for a single freight track should subsequently be occupied by several tracks and used for passenger trains.

The Branch of the New York & New England Railroad from Islington to Dedham.

On the 31st of December, 1887, the Board made a report upon the complaint of W. R. Guild and others *vs.* the New York & New England Railroad Company, in which it adjudged that it was the duty of the New York & New England Railroad Company to put the branch from Islington to Dedham in suitable condition for operation, and to operate the same. The complainants asked that the said corporation be required either to run passenger cars from Islington to Dedham or from Dedham Junction to Dedham. The facts proved at the hearing were not sufficient to determine whether it was the duty of the

said railroad company to operate the road from Dedham Junction, but it was proved to be the duty of the road to operate the branch from Islington to Dedham, and the Board so decided. The company has, however, put in operation the branch from Dedham Junction to Dedham, and has failed to rebuild and operate the branch from Islington to Dedham. It is presumed that the complainants are satisfied, since they only asked that either one branch or the other be operated, and the complaint has not been renewed.

The Resolve Relating to the Safety of Trackmen.

By chapter 98 of the Resolves of the year 1888, this Board was instructed to investigate whether any legislation is required to promote the safety of trackmen or other employees of railroads when at work upon the road-bed, and to report to the next General Court, with such recommendations and suggestions as might seem expedient.

In accordance with the Resolve, the Board hereby reports that it has investigated the subject, and that, in its opinion, no legislation is required.

Union Passenger Station in Boston.

The condition of affairs with reference to the union passenger station for the lines entering Boston on the north, continues practically the same as it was at the time of the last annual report. See Report 1888, page 36. No plans have yet been submitted by the Boston & Maine Railroad Company to the Fitchburg Railroad Company for its approval.

The Interstate Commerce Act.

The anti-discrimination and long and short haul principles of the Interstate Commerce Act having long ago been put into practical operation in this State, the act has not affected the railroads or the public so extensively as in some other States. There are indications, however, that the act is bringing about a change in the proportionate amount of business coming to the respective lines.

The past year would have been one of unusual prosperity, had it not been for the destructive competition of the Western roads. In spite of that competition, the average fares and

freights, as shown by the tables in the latter part of this report, compare favorably with those of the years 1884 and 1885. The increase over the year 1887, both in passenger and freight gross earnings, was greater than the average increase for the past ten years, but the net earnings were less than that of the year 1887 by the sum of $346,292.26. The percentage of the total gross income to the permanent investments in 1888 was 23; in 1887, 21. The percentage of net income to permanent investments was, in 1888, 5.1; in 1887, 5.4.

The expediency of amending our statutes relating to annual returns so that the fiscal year shall end on the 30th of June, and so that the form and character of the returns shall otherwise correspond more nearly with the requirements of the Interstate Commerce Commission, is suggested.

Cable and Electric Street Railways.

Section 39 of chapter 113 of the Public Statutes is as follows: "A street railway may use such motive power on its tracks as the board of aldermen of cities or the selectmen of towns through which it is located may from time to time permit." Under this section, electricity is now being used as a motive power on three street railways, and will soon be in use on at least two other lines.

The question has been raised as to whether the law, though it authorizes the use of any approved motive power, covers the erection and maintenance of poles and wires and the building of underground conduits. It may be wise to remove the doubt by supplemental legislation.

Chapter 337 of the Acts of the year 1886 specially authorizes street railway companies to use the cable system as a motive power, subject to the approval of this Board and of the mayor and board of aldermen of cities and the selectmen of towns. Under our general laws, therefore, the cable system of motive power is the only system which requires the approval of this Board, while any other motive power can be used upon street railways upon obtaining permission from the municipal authorities alone. No road in this State has as yet adopted the cable system.

In relation to the West End Company and other companies authorized to run cars in or into the city of Boston, by Statutes

1887, chapter 413, section 4, it is provided that they may, with the consent of the board of aldermen of the city or the selectmen of the town in which such action is contemplated, establish and maintain the cable and electric systems of motive power, or either of them; and, having first obtained permission from the board of aldermen of the city or the selectmen of the town, and the railroad commissioners, may make such underground and surface alterations of the streets in which their tracks shall be located as may be necessary to establish and maintain such cable and electric systems of motive power, or either of them.

In other words, the act contemplates in the first place the consent of the municipal authorities for the establishment and maintenance of the cable or electric systems, and then the permission of the municipal authorities and of the Board of Railroad Commissioners to make such underground and surface alterations of the streets as may be necessary therefor. Consequently, the approval of the Railroad Commissioners does not extend to the question of the expediency of establishing the system, but simply to a determination as to what underground and surface alterations of the streets are necessary to the establishment of the system selected by the municipal authorities.

Under the act the establishment of the overhead and the conduit electric systems in the city of Boston and the town of Brookline having been authorized by the municipal authorities, the approval of this Board has been asked and given.

The Board held that the term "underground and surface alterations" did not cover erections above the surface, such as poles and wires, and found that such underground and surface alterations as were proposed for the overhead system were necessary and unobjectionable. The proposed alterations for the conduit system were found to be objectionable on account of the proposed slot, but the Board approved of the same as being necessary to the establishment of the system selected by the municipal authorities. No method having been devised by which the conduit system can be operated with a slot opening of less than five-eighths of an inch, that width was approved.

This statement is made simply to correct a natural misunderstanding in regard to the scope of the investigation and the powers of the Board in the premises.

General Summary relating to Accidents.

During the year ending Sept. 30, 1888, the total number of casualties reported to the Board, as required by law, immediately after their occurrence, was 782, being 20 less than for the previous year. Of these, 244 were fatal, and 538 were not fatal.

The total number of passengers killed and injured was 117, of whom 12 were killed and 60 were injured by causes beyond their own control (two of the latter being injured by missiles thrown through car windows), and 6 were killed and 39 were injured by their own misconduct or imprudence. The total number of casualties to passengers was 81 less than in the preceding year. Twelve were killed and 58 were injured in train accidents, the most disastrous being that on the Boston & Maine Railroad, at Bradford, a report on which may be found in the Appendix. In that accident 11 persons were killed and 50 injured. By the derailment of a circus train on the New York & New England Railroad, 1 person was killed and 6 were injured.

The number of employees killed and injured was 391, against 357 in the preceding year. Of these, 80 were killed and 311 injured; the killed being one more than in 1887. The most prolific source of injuries to employees is the coupling or uncoupling of freight cars, 154 having been injured while performing that service, 7 of them fatally. Falling from cars or engines was the most fatal class of accidents, 29 having been killed and 53 injured in that way. Twelve were killed and 23 injured by train accidents, and 31 were killed and 81 injured by a great variety of causes, chiefly in the freight yards.

At highway grade crossings 27 were killed and 32 were injured; 16 being killed and 20 injured at crossings protected by gates or flagmen, while 11 were killed and 12 were injured at unprotected crossings.

At stations, 7 persons were killed and 12 were injured. These were parties who, being lawfully at stations, imprudently crossed the tracks before an approaching train, or attempted to get upon a passenger train after it had started. They are sometimes reported as "trespassers," but more properly are classed under the head "at stations."

The total number of trespassers killed and injured was 196, being 3 more than in the preceding year. Of these, the number of killed was 114, being 12 less than last year. Seven of them were apparently suicides.

Of the total number of persons reported to the Board as killed or injured, 28 were reported as intoxicated. Of these, 6 were passengers, 1 was an employee, 5 were at grade crossings, and 16 were trespassers. It is quite probable that many others of the last class, who were killed while lying on the track at night, were intoxicated.

Reference to the tables in the Appendix will show a marked difference in the number of accidents in coupling or uncoupling freight cars, as reported by various roads. While the Boston & Albany reported 62 such accidents, the Old Colony reported only 3, or about one-twentieth as many. Yet the freight tonnage, in the movement of which this class of accidents occurs, on the Boston & Albany was 3,728,897, and on the Old Colony 2,410,336, or about two-thirds as much; the average number of employees on the Boston & Albany was 5,826, and on the Old Colony 4,362, or four-fifths as many; and the miles of road operated in Massachusetts by the Boston & Albany was 332, and by the Old Colony 541, or about sixty-three per cent. more.

The ratio of passengers killed and injured from causes beyond their own control to the total number of passengers carried, is more favorable than in the preceding year, but is much higher than in some years of the last decade, as shown by the following table: —

Ratio of Passengers killed and injured from Causes beyond their Own Control to Whole Number carried.

YEAR.	Killed.	Injured.
1879,*	1 in 2,246,522	1 in 232,057
1880,	1 in 45,151,152	0 in 45,151,152
1881,	1 in 12,458,622	1 in 7,119,213
1882,	1 in 55,868,694	1 in 18,622,898
1883,	0 in 61,530,747	1 in 2,563,781
1884,	1 in 3,482,952	1 in 1,160,984
1885,	0 in 69,603,700	1 in 5,800,308
1886,	1 in 7,584,258	1 in 2,166,931
1887,	1 in 3,605,363	1 in 685,317
1888,	1 in 7,473,867	1 in 1,494,773

* Includes the Wollaston disaster in October, 1878.

The foregoing table, however, does not give an exact ratio of accidents to the number of passengers carried, because it is based on the number of accidents in Massachusetts only, and the total number of passengers carried on the entire roads both in and outside of the State, the number carried within the State not being shown by the returns.

The following table shows the ratio for the various roads on the same basis as in the preceding table : —

RAILROADS.	Passengers Killed or Injured by causes beyond their own control.	Total Passengers Carried.	Ratio of Injuries to Passengers Carried.
Boston & Albany, . . .	1	11,991,869	1 in 11,991,869
Boston & Maine, . . .	61	26,639,521	1 in 436,713
Fitchburg, ...	2	5,591,873	1 in 2,795,936
New York & New England, .	8	6,852,379	1 in 856,547
All other roads, including Old Colony, ...	0	38,610,770	0 in 38,610,770
All railroads in the State, .	72	89,686,412	1 in 1,245,644

RAILROADS.	Passengers Injured by their own fault.	Total Passengers Carried.	Ratio of Injured to Passengers Carried.
Boston & Albany, . . .	11	11,991,869	1 in 1,090,170
Boston & Maine, . . .	18	27,073,318	1 in 1,504,073
Boston & Providence, . .	1	*3,401,077	1 in 3,401,077
Connecticut River, . . .	1	1,750,372	1 in 1,750,372
Fitchburg, ...	5	5,591,873	1 in 1,118,374
New York & New England, .	8	6,852.379	1 in 856,547
Old Colony, ...	1	14,689,497	1 in 14,689,497
Other roads, ...	0	18,336,027	0 in 18,336,027
All railroads in State, . .	45	89,686,412	1 in 1,993,031

* From Oct. 1, 1887, to April 1, 1888.

According to the returns, the average traveller by railroad last year in this State ran about four times as great a risk of losing his life as one travelling by railroad in Great Britain.

The proportion of passengers killed by causes beyond their own control was: —

In Massachusetts,	1 in 7,473,867.
In Great Britain,	1 in 29,347,120.

The risk of being injured, however, and not killed, was more nearly equal, being: —

In Massachusetts,	1 in 1,494,773.
In Great Britain,	1 in 1,363,713.

The following table shows the ratio of accidents, fatal and otherwise, to employees, as compared with the whole number, on the larger roads of the State.

RAILROAD.	Total Number of Employees.	Number Killed and Injured.	Ratio.
Boston & Albany,	5,826	130	1 in 45
Boston & Maine,	8,919	49	1 in 182
Fitchburg,	4,607	50	1 in 92
New York & New England,	4,129	52	1 in 79
Old Colony,	4,362	25	1 in 174

This table also is not accurate, because the total number of employees includes all, both in and outside of Massachusetts, while the accidents are only those which occurred within the State. The same is true of a comparison by freight-train mileage, which includes that for the whole of the roads, and of course vitiates any computations of the ratio of accidents to such mileage. It is evident, however, from the number of injuries reported, as well as from an examination of the reports, that some roads report only the more serious accidents, while others, notably the Boston & Albany, report those also which are comparatively slight.

Railroad Construction.

During the year ending Sept. 30, 1888, there were returned as constructed the following additional miles of railroad in this State: —

Central Massachusetts (Ware to Northampton),	28.570
Chatham,	7.000
Hoosac Tunnel & Wilmington,	8.000
Old Colony (Easton Branch),	5.520
	49.090
And there was a decrease, by a remeasurement on several roads and a change of line on one road, of	3.430
Additional miles,	45.660

Mileage of Railroads.

The total length of railroads belonging to the corporations making returns to this Board was 3,087.883 miles of main line and branches, of which 1,027.587 were provided with double track. Last year the total length was 2,992.823 miles, with 1,036.717 miles of double track; showing an increase of 95.060 of total length, and a decrease of 9.130 miles of double track. The total length of sidings was 1,443.310 miles, as against 1,360.009; showing an increase of 83.301 miles. The total length of track, considering double track and sidings as so much additional single track, is 5,558.780 miles, as against 5,389.549 of last year; the increase being 169.231 miles. Of the whole amount there are in this State, of main line 2,063.918 miles, of double track 743.469, and of sidings 1,010.026 miles, being a total of 3,817.413, as against 3,722.977 miles of last year; showing an increase of track in this State of 94 436 miles.

Cost of Roads.

The average cost of standard-gauge roads is returned at $69,050.40 per mile; the cost of equipment per mile operated averages $5,901.05, — making the average cost of a standard-gauge road, with equipment, $74,951.45. The cost of narrow-gauge roads averages $28,700.07 per mile, and $6,014.67 per mile additional for equipment.

Number of Corporations.

Returns were received from fifty-seven corporations, — fifty-six railroad and one canal company. The Hanover Branch, the Ocean Terminal, the Springfield & New London companies, having been absorbed by other corporations, have been dropped from the list. The Long Beach, having been incorporated under the general law the past year, has been added.

Capital Stock and Debt.

The aggregate capital stock was $151,076,704.02, an increase of $607,290.00, resulting from an increase of the capital stock of the following roads: —

Old Colony,	$400,000 00
New York & New England (preferred),	250,000 00
Connecticut River,	210,000 00
Grafton & Upton,	50,000 00
Hoosac Tunnel & Wilmington,	50,000 00
Central Massachusetts,	59,930 00
Providence, Webster & Springfield,	25,000 00
Chelsea Beach,	17,300 00
Fitchburg,	4,000 00
Chatham,	2,005 00

The capital stock of the Springfield & New London, amounting to $198,145.00, and the Ocean Terminal, amounting to $2,000.00, have been dropped from our accounts, these companies now being merged in other companies. The capital stock of the Nantucket has been reduced by a reorganization $11,000.00.

The net debt of the companies — the gross debt less cash assets — amounts to $92,088,750.60, an increase of $8,394,262.40. The cash assets of all the railroad companies of the State have decreased by the amount of $401,735.61. The returns for the last seven years are as follows: —

YEARS.	Stock.	Net Debt.
1882,	$122,976,262 26	$71,913,806 00
1883,	122,367,572 27	72,933,290 93
1884,	127,668,390 27	74,439,473 75
1885,	128,551,658 54	73,706,622 04
1886,	130,687,969 02	71,012,497 49
1887,	150,469,414 02	81,646,094 60
1888,	151,076,704 02	92,088,750 60

Gross Income.

The total gross income of these corporations for the year is $58,805,604.24, an increase of $5,155,165.97, being an increase of 9.6 per cent.

The following table gives a comparison for seven years : —

YEARS.	Gross Income.	Increase from Previous Year.	Per cent. of increase.
1882, ...	$40,846,370 10	–	–
1883, ...	43,380,387 63	$2,534,017 53	6.2
1884, ...	43,119,302 70	261,084 93*	0.6*
1885, ...	44,623,350 35	1,504,047 65	3.5
1886, ...	49,315,820 50	4,692,470 15	10.5
1887, ...	53,650,438 27	4,334,617 77	8.8
1888, ...	58,805,604 24	5,155,165 97	9.6

The total expenses — including rents paid — of all the corporations amounted to $45,918,962.15, an increase of $5,501,458.23. The net income was $12,886,642.09, being a decrease of $346,292.26. The passenger earnings were $27,368,655.77, an increase of $2,082,919.08 over the year 1887, when they amounted to $25,285,736.69. The freight earnings were $26,351,379.06, an increase of $1,568,457.41 over those of last year, which amounted to $24,782,921.65.

The local passenger earnings were $18,607,984.99, an increase of $1,598,143.33 over the figures of last year, which were $17,009,841.66. The through passenger earnings were $6,205.254.77, an increase of $255,174.43 over the amount for last year, which was $5,950,080.34. The express, mail, and other earnings included in total passenger earnings, as given above, amounted to $2,555,416.01, being an increase of $229,601.32, this item having been, in 1887, $2,325,814.69. The local freight earnings were $12,091,724.31 ; in 1887 they were $11,621,372.13, showing an increase of $470,352.18. Through freight was $14,103,339.56, against $13,034,633.12, an increase of $1,068,706.44.

The income from all other sources of the freight department amounted to $156,315.19, as against $126,916.40, an increase of $29,398.79. The following table gives the earnings in strictly railroad business during the past ten years : —

* Decrease.

YEARS.	Total Transportation.	Increase or Decrease from Previous Year.	Percentage.
1878–79,	$29,152,829 02	–	–
1879–80,	33,661,822 69	$4,508,993 67	15.40
1880–81,	35,936,302 87	2,274,480 18	6.75
1881–82,	39,094,369 25	3,158,066 38	8.79
1882–83,	41,635,800 39	2,541,431 14	6.50
1883–84,	41,456,977 30	178,823 09*	0.43*
1884–85,	41,742,340 99	285,363 69	0.69
1885–86,	46,171,689 24	4,429,348 25	10.61
1886–87,	50,068,658 34	3,896,969 10	8.40
1887–88,	53,720,034 83	3,651,376 49	7.29

The following tables show the passenger and freight earnings for the past ten years, and the comparative amount of passenger and freight mileage during the same period: —

YEARS.	Passenger Earnings.	Freight Earnings.
1878–79,	$13,035,047 44	$14,813,337 69
1879–80,	14,532,368 06	17,741,746 39
1880–81,	17,328,495 48	18,607,807 39
1881–82,	19,567,274 71	19,527,094 54
1882–83,	20,602,289 13	21,033,511 26
1883–84,	21,207,200 42	20,249,776 88
1884–85,	21,549,369 27	20,192,971 72
1885–86,	23,331,325 71	22,840,363 53
1886–87,	25,285,736 69	24,782,921 65
1887–88,	27,368,655 77	26,351,379 06

Passenger and Freight Mileage.

YEARS.	Total Passenger Mileage.	Total Freight Mileage.
1878–79,	616,871,131	806,064,933
1879–80,	708,645,422	959,429,750
1880–81,	788,422,761	1,080,802,796
1881–82,	892,321,207	1,130,070,652
1882–83,	943,245,658	1,220,824,418
1883–84,	1,007,136,376	1,229,368,472
1884–85,	1,041,628,073	1,266,160,455
1885–86,	1,124,148,045	1,391,626,438
1886–87,	1,242,031,078	1,517,932,012
1887–88,	1,303,094,023	1,685,923,614

* Decrease.

The increase of passenger mileage — or passengers carried one mile — for the year amounts to 61,062,945. The increase of freight mileage, or tons of freight carried one mile, amounts to 167,991,602. The total number of passengers carried was 89,686,412, showing an increase of 6,763,048 over the previous year. The whole number of tons of freight carried was 25,787,383, as against 24,605,140; showing an increase of 1,182,243 tons.

Earnings per Mile of Road.

The average sum earned on each mile of main track and branch operated was $13,001.65; or, computing double track as additional single track, the average per mile was $10,412.13. The average transportation earnings per mile, on the seven roads of standard-gauge terminating in Boston, was $12,460.37, being an increase of $879.79 per mile.

Cost of Operating.

The following table shows the cost of operating the roads during the past ten years, and the percentage of operating expenses, not including taxes, as compared with gross receipts: —

YEARS.	Cost of operating per Mile of Road.	Percentage of Operating Expenses to Gross Receipts.
1878–79,	$6,576 75	65
1879–80,	7,786 00	68
1880–81,	8,146 15	68
1881–82,	8,603 10	69
1882–83,	9,192 56	71
1883–84,	8,062 12	66
1884–85,	7,460 50	62
1885–86,	8,147 84	63
1886–87,	8,416 72	64
1887–88,	9,320 43	65

Gross and Net Income.

The total gross and net income of all the corporations for ten years, and the percentage of gross and net income compared with the permanent investments, were as follows: —

YEARS.	Total Gross Income.	Percentage to Permanent Investments.	Net Income.*	Percentage to Permanent Investments.
1878–79, .	$30,312,964 54	17.5	$10,154,013 86	5.8
1879–80, .	35,140,374 77	19.5	11,191,815 53	6.2
1880–81, .	37,764,395 83	19.9	10,701,751 60	5.6
1881–82, .	40,846,370 10	20.5	19,902,202 95	5.5
1882–83, .	43,380,387 63	21.8	10,900,479 92	5.4
1883–84, .	43,119,302 70	20.4	11,048,618 19	5.2
1884–85, .	44,623,350 35	20.8	12,118,974 88	5.7
1885–86, .	49,315,820 50	23.0	13,428,581 32	6.3
1886–87, .	53,650,438 27	21.9	13,232,934 35	5.4
1887–88, .	58,805,604 24	23.5	12,886,642 09	5.1

The net income of 1887–88 was earned by the several corporations in the following proportions as compared with their permanent investments: —

12 companies with			$9,027,000	permanent investment	had	no net income.
11	"	"	48,312,000	" "	"	$3\frac{1}{2}$ per cent. or less.
16	"	"	75,449,000	" "	"	$3\frac{1}{2}$ to $5\frac{1}{2}$ per cent.
8	"	"	15,419,000	" "	"	$5\frac{1}{2}$ to $7\frac{1}{2}$ "
6	"	"	66,325,000	" "	"	$7\frac{1}{2}$ to $9\frac{1}{2}$ "
3	"	"	35,923,000	" "	"	over $9\frac{1}{2}$ "
56	"	"	$250,455,000	" "	"	a net income † of 7.3 per cent.

Dividends.

The total amount of dividends declared was $7,986,226.10, an increase of $435,324.49 over last year. Of the 56 corporations, 32 paid dividends varying from 1 to 10 per cent. The following table shows the amount paid in dividends by all the corporations for ten years, with the percentage to capital stock, and also the amount of interest paid: —

* Gross income less total expenses and rents. † Rentals not deducted.

YEARS.	Amount Paid in Dividends.	Percentage to Total Capital Stock.	Interest Paid.
1878–79, ...	$5,264,431 78	4.30	$3,172,990 59
1879–80, ...	5,987,718 64	5.05	3,423,752 25
1880–81, ...	6,287,866 82	5.15	3,748,292 55
1881–82, ...	6,271,139 86	5.10	4,291,222 59
1882–83, ...	6,379,721 10	5.21	4,756,085 23
1883–84, ...	6,535,054 92	5.12	4,729,328 56
1884–85, ...	6,551,704 15	5.10	4,767,095 88
1885–86, ...	6,857,506 30	5.33	4,810,019 68
1886–87, ...	7,550,901 61	5 02	4,880,512 85
1887–88, ...	7,986,226 10	5.29	5,506,299 90

Amount of Business.

The annual passenger and freight movement on all the roads, for ten years, appears in the following tables: —

YEARS.	No. of Passengers Carried.	No. of Passengers Carried One Mile.	Average Distance Travelled.
1878–79, ...	39,217,634	616,871,131	15.73
1879–80, ...	45,151,152	708,645,422	15.70
1880–81, ...	49,834,491	788,422,761	15.82
1881–82, ...	55,868,694	892,321,207	15.97
1882–83, ...	61,530,747	943,245,658	15.33
1883–84, ...	66,517,265	1,007,136,376	15.29
1884–85, ...	69,603,700	1,041,628,073	14.97
1885–86, ...	75,842,581	1,124,148,085	14.82
1886–87, ...	82,923,364	1,242,031,078	14.98
1887–88, ...	89,686,412	1,303,094,023	14.53

YEARS.	Tons Freight Carried.	Tons Freight Carried One Mile.	Average Distance each Ton was Carried.
1878–79, ...	14,401,877	806,064,933	56.00
1879–80, ...	17,221,567	959,429,750	55.70
1880–81, ...	17,971,072	1,080,802,796	60.14
1881–82, ...	19,061,164	1,130,070,652	59.29
1882–83, ...	20,202,881	1,220,824,418	60.43
1883–84, ...	20,273,920	1,229,368,472	60.64
1884–85, ...	20,577,096	1,266,160,455	61.53
1885–86, ...	22,925,532	1,391,626,438	60.70
1886–87, ...	24,605,140	1,517,932,012	60.88
1887–88, ...	25,787,383	1,685,923,614	65.38

The miles run by passenger and freight trains, and the total miles run by all trains for the past ten years, were as follows: —

YEARS.	MILES RUN BY —		
	Passenger Trains.	Freight Trains.	All Trains.
1878–79, ...	10,792,629	8,974,993	22,755,910
1879–80, ...	11,350,716	9,809,975	24,975,392
1880–81, ...	12,413,290	10,398,539	27,205,783
1881–82, ...	13,636,169	10,598,126	29,052,800
1882–83, ...	14,244,658	11,382,154	31,150,823
1883–84, ...	15,157,425	11,282,338	32,304,333
1884–85, ...	16,212,988	11,722,667	34,168,999
1885–86, ...	17,268,159	12,303,808	36,441,043
1886–87, ...	18,522,488	13,057,794	39,391,079
1887–88, ...	20,262,326	13,693,603	42,494,669

Cost of Running Trains.

The average cost of running trains one mile during this year on all roads reported has been $0.906. The cost (not including taxes) of running each train mile for the past eight years was as follows: —

Cost per Total Train Mile.

1880–81, . . .	$0.810	1884–85, . . .	$0.813
1881–82, . . .	.863	1885–86, . . .	.845
1882–83, . . .	.949	1886–87, . . .	.883
1883–84, . . .	.895	1887–88, . . .	.906

The following table shows the cost, not including taxes, for five years, per total train mile, to each of the leading corporations of the State: —

	Cost per Total Train Mile.				
	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
Boston & Albany,	$0.927	$0.819	$0.933	$0.967	$0.987
Boston & Lowell,	.781	.650	.680	.706	–
Boston & Maine,	.900	.805	.805	.807	.810
Boston & Providence,	1.220	1.158	1.216	1.563	–
Fitchburg,	.800	.748	.753	.805	.800
New York & New England,	.932	.839	.834	.823	.831
Old Colony,	.879	.863	.909	.935	.949
Connecticut River,	.936	.906	.967	1.020	1.077
New York, New Haven & Hartford,	.968	.898	.937	1.016	1.029
Providence & Worcester,	1.072	.961	.994	.930	1.055

The cost of certain specified items of train service per total train mile for the last six years is divided as follows: —

	1883.	1884.	1885.	1886.	1887.	1888.
Repairs of road-bed,	$0.133	$0.122	$0.118	$0.122	$0.125	$0.131
of bridges,	.024	.024	.023	.025	.022	.030
of rails,	.030	.021	.015	.015	.013	.018
of locomotives,	.066	.060	.054	.056	.054	.051
of passenger cars,	.092	.039	.035	.039	.041	.048
of freight cars,	.138	.043	.035	.047	.048	.047
Wages,	.287	.283	.268	.272	.284	.286
Oil and waste,	.011	.010	.008	.007	.007	.007
Fuel,	.124	.111	.094	.091	.095	.099
Totals,	$0.905	$0.713	$0.650	$0.674	$0.689	$0.717

The earnings for each revenue-train mile, for each passenger-train mile, and for each freight-train mile, on ten of the principal roads in the State during the past five years, are given in the following tables: —

	Earnings per Total Revenue-Train Mile.				
	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
Boston & Albany,	$1.542	$1.406	$1.596	$1.628	$1.717
Boston & Lowell,	1.451	1.199	1.139	1.225	–
Boston & Maine,	1.587	1.541	1.580	1.584	1.472
Boston & Providence,	1.749	1.715	1.763	1.802	–
Fitchburg,	1.394	1.324	1.337	1.417	1.359
New York & New England,	1.360	1.466	1.638	1.646	1.585
Old Colony,	1.685	1.723	1.727	1.730	1.743
Connecticut River,	2.080	1.691	1.828	1.914	1.955
New York, New Haven & Hartford,	1.772	1.767	1.886	1.876	1.822
Providence & Worcester,	1.832	1.962	2.110	2.192	2.282

	Earnings per Passenger-Train Mile.				
	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
Boston & Albany,	$1.824	$1.733	$1.783	$1.754	$1.739
Boston & Lowell,	1.071	.954	.888	.978	–
Boston & Maine,	1.402	1.373	1.402	1.407	1.250
Boston & Providence,	1.499	1.471	1.527	1.542	–
Fitchburg,	1.011	.965	.924	.978	.971
New York & New England,	1.018	1.074	1.161	1.191	1.141
Old Colony,	1.444	1.415	1.398	1.402	1.460
Connecticut River,	1.593	1.112	1.239	1.305	1.332
New York, New Haven & Hartford,	1.835	1.726	1.815	1.756	1.614
Providence & Worcester,	1.221	1.560	1.591	1.566	1.523

	Earnings per Freight-Train Mile.				
	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
Boston & Albany,	$1 359	$1.199	$1.465	$1.530	$1.696
Boston & Lowell,	2.266	1.519	1.469	1.536	–
Boston & Maine,	2.029	1.904	1.944	1.941	1.884
Boston & Providence,	2.498	2.451	2.450	2.674	–
Fitchburg,	1.768	1.728	1.792	1.915	1.759
New York & New England,	1.729	1.966	2.216	2.154	2.093
Old Colony,	2.177	2.450	2.562	2.562	2.496
Connecticut River,	2.639	3.060	3.167	3.286	3.438
New York, New Haven & Hartford,	1.670	1.844	2.014	2.109	2.213
Providence & Worcester,	3.205	2.426	2.734	3.122	3.587

Fares and Freights.

The four following tables show the average fares on all roads, the average fares and freights for eight years on the leading roads, and the change in average rate of freight on six roads since 1865 : —

Average Fare on all Roads in the State.

1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
$0.0220	$0.0200	$0.0201	$0.0192	$0.0187	$0.0188	$0.0185	$0.0190

Average Fares for Six Years.

	Fares.					
	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Boston & Albany,	2.08	1.91	1.84	1.85	1.88	1.87
Boston & Maine,	1.97	1.90	1 74	1.80	1.83	1.94
Boston & Providence,	1.88	1.88	1.84	1.87	1.85	–
Old Colony,	2.00	1.87	1.70	1.70	1.69	1.85
Boston & Lowell,	1.94	2.12	2.04	2.06	2.13	–
Fitchburg,	1.77	1.65	1.83	1.75	1.89	1.97
New York & New England,	2.46	2.01	1.93	2.02	2.07	2.02
Connecticut River,	2.36	2.37	2.34	2.42	2.42	2.42
New York, New Haven & Hartford,	1.98	1.96	1.94	1.92	1.77	1.68
Providence & Worcester,	2.14	2.12	2 08	2.10	2.10	2 12

Average Freights for Six Years.

	Freights.					
	1883.	1884.	1885.	1886.	1887.	1888.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Boston & Albany,	1.20	1.09	0.94	1.10	1.10	1.08
Boston & Maine,	2.24	2.34	2.13	2.27	2.22	1.96
Boston & Providence,	2.83	2.82	2.83	2.84	2.93	–
Old Colony,	3.16	3.00	2 90	2.93	2.90	2.90
Boston & Lowell,	2.98	2.33	1.77	1.67	1.71	–
Fitchburg,	1.19	1.09	1.06	1.07	1.13	1.09
New York & New England,	1.38	1.41	1.71	1.67	1.63	1.56
Connecticut River,	3.04	3.05	2.96	2.81	2.92	2.65
New York, New Haven & Hartford,	1.89	1 96	1 96	2.00	1.95	1.78
Providence & Worcester,	2.96	3.09	2.45	2.49	2.55	2.52

Average Rates of Freight, 1865 and 1888.

	Rate 1865. Cents.	Rate 1888. Cents.	Per cent. of 1865 to 1888.
Boston & Albany, ...	3.90	1.08	28
Boston & Maine, ...	4.58	1.96	43
Connecticut River, ...	6.20	2.65	43
Fitchburg, ...	4.10	1.09	27
Old Colony, ...	3.20	2.90	91

Steel Rails.

During the year, 287.136 miles of steel rail were laid, as against 329.527 laid last year, making the whole amount now laid 4,131.783 miles, being more than the total of main line, including double track and branches, showing that part of the sidings are now in steel. The amount of steel rail laid each year for six years is shown in the following table: —

	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
Steel rail (miles), .	308	347	215	237	329	287

Rolling Stock.

The increase in the number of locomotives during the year has been 85, and of passenger cars, 252; mail and baggage cars have increased 17; freight and miscellaneous cars have increased 608.

The following table shows the amount of rolling stock returned for the last seven years: —

	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
Locomotives, .	1,222	1,286	1,391	1,416	1,445	1,550	1,635
Passenger cars, .	1,658	1,790	1,948	1,993	2,058	2,191	2,443
Mail and baggage cars, . . .	463	482	525	509	518	564	581
Freight cars, .	26,382	28,008	29,701	29,957	31,319	34,200	34,808

Employees.

The average number of persons employed by the railroad corporations was 38,928, being 3,628 more than in the year before. The following table shows the number employed for each of the past eight years: —

1880–81, ...	25,490	1884–85, ...	30,069
1881–82, ...	27,403	1885–86, ...	31,188
1882–83, ...	29,844	1886–87, ...	34,200
1883–84, ...	30,590	1887–88, ...	38,928

The whole number employed by all the corporations making returns to this Board is 44,459.

Street Railways.

Returns were received from 46 street railway companies. The report of the Framingham Union Company was returned to that company by reason of its being defective and not in the form required by the statute.

During the year seven have been incorporated and added to the list. Under chapter 113 of the Public Statutes, the East Side, the East Wareham Onset Bay & Point Independence, Framingham Union, Quincy, Quincy & Boston and Revere companies were incorporated. The Marlborough company was incorporated by a special act of the Legislature. The Acushnet, Citizens', New Bedford & Fairhaven, Salem & Danvers and Worcester companies having been consolidated or purchased by other companies no returns consequently were received, and the names of these companies have been dropped from our list.

The aggregate capital stock is $10,894,850.00, being an increase of $798,050.00; their gross debt has also increased $1,121,542.86, and now amounts to $7,569,250.76. The aggregate of stock and gross debt is now $18,464,100.76.

One corporation paid a dividend of 10 per cent.; five of 8; one of 7; eight of 6; one of 5; five of 3; while the remaining companies declared and paid no dividends.

The average rate of dividend on the total amount of capital stock was 5.74 per cent.; and the net earnings amount to 5.94 per cent. on the aggregate of capital stock and gross debt.

The whole length of track, including branches, sidings, and double track, amounts to 561.818 miles, being an increase of 54.733 miles. The average cost was $16,920.79 per mile for permanent way, $7,317.25 for equipment, and $9,449.67 for land and buildings; making a total cost of $33,687.71 for each mile of road owned. The number of round trips was 3,220,-578, a decrease of 2,029 over the previous year; with a mileage of 23,244,767, an increase of 2,618,921. Passengers were carried to the number of 134,478,319, being an increase of 9,690,991 over the number carried during the preceding year. The number of passengers carried on the street railways exceeded the number on the steam roads by 44,791,907.

The gross income was $6,860,504.32, an increase of $400,-979.52. There was an increase of net income of $177,692.06; with an increase of dividends paid amounting to $94,696.67.

The average amount received for the conveyance of each passenger was 5.10 cents, and the average cost of carrying each person amounted to 4.28; the net profits to the companies being 0.82 cent, against 0.74 cent as compared with last year. The average cost of a round trip was $1.79, with a profit of 34 cents, being an increase of 6 cents over last year.

The whole number of horses was 11,391, being a decrease of 483; the number of cars was 2,588, showing a decrease of 45, and the number of other vehicles was 439. The number of persons employed on street railways was 5,531, being an increase of 309 over last year. The number of accidents reported was 227, of which ten were fatal. The number injured the previous year was 131; eight of whom were killed.

GEORGE G. CROCKER.
EDWARD W. KINSLEY.
EVERETT A. STEVENS.

Jan. 8, 1889.

APPENDIX.

[A.]

REPORT ON THE LAW AND PRACTICE IN GERMANY WITH REGARD TO THE MEANS AND METHODS EMPLOYED FOR INCREASING THE SAFETY AND FACILITY OF RAILROAD OPERATION, AS WELL AS THE CONVENIENCE AND SAFETY OF HIGHWAY AND STREET TRAFFIC.

By A. GOERING,

Professor of Railroad Engineering in the Polytechnicum at Berlin.

[Translated by Prof. GEO. F. SWAIN.]

(Copy.)

Berlin, Nov. 12, 1888.

To the Mass. Board of Railroad Commissioners, Hon. George G. Crocker, *Chairman.*

In compliance with the request of your Board, communicated by Prof. Swain, I beg leave to respectfully submit herewith a report upon the law and practice in Germany with regard to the means and methods employed for increasing on the one hand the safety and facility of railroad traffic and on the other of street and highway traffic.

Very respectfully,

[Signed] A. GOERING,

Prof. of Railroad Engineering at the Royal Polytechnic School in Berlin-Charlottenburg.

REPORT.

I. PRACTICE WITH REGARD TO GRADE CROSSINGS AND TRACK OUTSIDE OF STATIONS.

A. Historical Development down to the Formation of the North German Confederation.

For the understanding of this part of the subject, it is first of all necessary to call to mind how the development of the German railroads took place, and what legal views were held from the beginning with respect to the mutual duties and privileges of the roads and the public.

1. Duties and Obligations of the Railroads.

With regard to these, it is in the first place to be noted that in Germany during the first thirty years of railroad building, commencing in 1835, the only lines constructed were those which are now known as "primary" roads, or roads of the first class. In the case of these roads the speed is considerable (up to 46½, and, in exceptional cases, 56 miles per hour), and on this account the following precautions have from the beginning been considered necessary: —

(*a.*) Careful supervision or guarding of the track throughout its entire length by section men (flagmen) who are stationed at section houses placed at distances of 1¼ to 1½ miles apart, and who are required to inspect their sections at least three times during the day. Each man must also exercise continual oversight over his section whenever there is any traffic upon it.*

If any traffic takes place during the night, these men are relieved by others, who must continue the same careful watch. Every section house for section men is provided with electric bell signals.

(*b.*) A fencing-in or definition of the right of way for the entire length of the road. These fences are hedges, wire fences, or other kinds; and in some cases, particularly in places where the road runs along a level plain, there is simply a ditch, with earth thrown up so as to form an embankment on one side [P. R., § 4]. These fences or

* Police Regulations for railroads, § 5. These Police Regulations will hereafter be referred to as P. R.

ditches must be of such a character that they are sufficient to keep cattle and irresponsible persons (children) from the right of way.

(*c.*) Without exception, the employment of gates at grade crossings. These gates must be strong and easily seen, and in the case of highways on which there is much travel they must be operated by gate tenders. Only in the case of highways seldom used is it allowable to operate them by wires from a distance.

It was not until about the year 1870 that in Germany, in the case of certain roads, these requirements were relaxed, and thus arose the now so-called "secondary roads," or roads of secondary importance, regarding which mention will be made later.

Encroachment of the Governmental Power. — Prussian Railroad Law of Nov. 3, 1838.

In the original development of the German roads, which, therefore, consisted at first entirely of primary roads, the construction and operation were in some of the states from the beginning undertaken *entirely* by the government. Such, for example, was the case in Hannover, Braunschweig, Baden, Würtemberg, and others. In the other states, such as Saxony, and particularly Prussia, the government had at least gone so far as to take part to a large extent in the construction of the railroads, and had built some of them entirely as government roads. Laws were also passed at an early day with respect to this matter. In Prussia, by far the largest German state, there was passed as early as 1838, an "Act with regard to projected railroads," which even to-day forms the basis of railroad law in Prussia, and indirectly also in many other German states, although it has, in various respects, been modified by later statutes. It is to-day known in Prussia as the "Railroad Act," and, so far as could be done at the time of its passage, it defined in forty-nine paragraphs all the legal relations between the railroads on the one hand, and the government, the towns, and the public on the other. It covers equally private and state roads, and subjects the private roads to a sharp oversight and control on the part of the state. This tendency has been more and more pronounced in the course of later developments, and has always resulted in diminishing the independence of the roads.

Of particular importance for the questions to be here considered are paragraphs 4 and 14 of this act, which read as follows: —

§ 4. "The complete location of the road must be subject to the approval of the Minister of Public Works; and the constructive details, not only of the road but of the rolling stock to be employed, must be subject to the same approval."

§ 14. "Besides the payment of damages (for right of way, etc.), the company must construct and maintain all works which are considered necessary by the government, in the way of roads, crossings, cattle passes, fences, ditches, and for protection against floods."

"Should the necessity for such works arise after the opening of the road, in consequence of changes in the use or ownership of neighboring lands, then the road must construct and maintain said works, but at the sole expense of the interested parties, who may be required by the road to deposit beforehand a certain forfeit or security."

In consequence of these requirements and of similar statutes passed in the other German states, the local government Boards have always had full power to compel the railroads, when constructed or extended, to carry out all works which were considered necessary or desirable for the protection of the public or of private individuals, within the limits of the above-quoted statute. In cases of complaint, the decision lay with the proper minister.

The only protection, therefore, against requiring too much of the roads, and imposing upon them too great expenditures, was the doubt as to whether they would be constructed if the conditions were made too severe, since, of course, every extension of the railroad system was for the public interest.

It is true that, according to Sect. 2, of § 14, quoted above, the roads could not be compelled to undertake, at their own cost, any subsequent alterations in their works in cases where they, for their part, contemplated or desired no change. It was, therefore, not possible, without further provision, to require the roads to separate their grades in the case of highway grade crossings, simply because the traffic over the highway or street had increased since the construction of the railroad, or the city extended out beyond the railroad. Yet means were almost always soon found to require the roads to carry out such improvements.

Participation of the Railroads in subsequent Alterations of Highways.

In the first place, according to § 14, Sect. 1, of the statute quoted above, it was always considered that the railroad was bound to properly protect all its works, and that any increase in the means of protection necessary was brought about by the railroad; and the local government Boards could therefore require an increase in such means of protection or in the number of gate tenders, sometimes to such an extent that, at wide grade crossings with many tracks, two or even four tenders were frequently required to be continually on duty. Not only might in this way the annual expense of maintaining such a

crossing become so large that it represented the interest on a considerable sum, but, moreover, such an increase in *highway* traffic occurred either at crossings of city streets in the neighborhood of stations, or in places where the city had grown out beyond the railroad, and entirely new streets had been laid out across the original tracks, and in such cases, frequently, the necessities of the *railroad* itself, in the way of new tracks for switching or making up trains, etc., had simultaneously increased to such an extent that an enlargement or reconstruction of the station and yards, and the arrangement of additional tracks, had become almost imperative.

Such extensions of stations and yards almost always affected the streets or crossings in the immediate neighborhood; that is to say, precisely the ones which, on account of the increase in street traffic, most required a separation of grades. Now, as soon as the railroad company proposed to carry out such an extension or alteration, the opportunity was found for the local government Board to require the reconstruction of the streets in question, and the separating of the grades, as a condition for the execution of such project, so that in this way the railroad was obliged to bear the entire cost of the same.

As a rule, therefore, the city governments were in position (and are still) to wait until the roads themselves proposed some such extension of their stations or yards, and they then applied to the local government Boards for a simultaneous improvement in the matter of separating grades at certain crossings, thus securing the same at the entire expense of the railroads.

Indeed, in many cases the coercion exerted by the authorities upon the managements of the private roads was carried considerably further, and as a condition for permission to carry out extensions or alterations at one place, other changes were required which referred to entirely different portions of the railroad, and which, therefore, stood in no relation whatever to the works proposed by the company. In this way, for instance, the authorities even took advantage of the petitions of private roads for extension of their charters with regard to the building of branch lines; further, of their petitions for the consolidation of different roads; and finally, also, of their petitions for the guarantee of interest by the state, a method which was for a long time very popular in Germany, as a means of inducing the private roads to construct such new lines as could not be depended upon to be at once profitable, but whose construction would be for the benefit of the government. In these cases, the granting of such petitions was often coupled with conditions not having any relation to the matter in question, and which were often very onerous.

German Railroad Union.

The railroad corporations, on their part, for the purpose of securing the uniformity and agreement in regard to technical matters which was rendered imperative by the intricacies of traffic, the transfer of rolling stock, etc., had formed in 1856 a mutual association known as the "German Railroad Union." This soon attained great influence, extending not only over Germany and Austria, but also over some neighboring countries; and it has from time to time issued what are known as the "Technical Agreements,"* formulated and agreed upon, after much discussion, by the leading men in the different departments, and covering all the important points with regard to construction and maintenance. These agreements are in part obligatory upon all members of the Union, and in part simply recommendatory. This association comprises at the present time 48† German, 26 Austro-Hungarian, and 11 other corporations, and with respect to mileage it comprises: —

Germany	23,529 miles	(37,838 kilometres).	
Austria-Hungary . .	10,711 "	(17,220 "	).
Other roads . . .	2,972 "	(4,778 "	).
Total	37,212 "	(59 836 "	).

This association maintains a weekly *Railroad Journal*, and a bimonthly technical periodical, known as the *Organ of Railroad Progress*,‡ which is the best and the most influential technical railroad journal in Germany.

The "Technical Agreements" have for a long time contained, with respect to the questions here considered, — that is to say, supervision and guarding of the track, fencing, and protection of grade crossings, — the same requirements which were stated above under *a* to *c* (pp. 110, 111), and these requirements are found almost unchanged in the newest edition, that of 1882, in §§ 38–47 and 174–177.

All these requirements refer only to primary roads, since, up to about the year 1870, with very few exceptions, no other roads were permitted in Germany for public traffic.

2. Rights and Privileges of the Railroads.

Such, therefore, was the condition of things before the formation of the North German Confederation (1867) and for a few years

* "Technische Vereinbarungen." These will be referred to hereafter under the abbreviation T. V.

† Counting separately the eleven different systems of the Prussian state roads.

‡ "Organ für die Fortschritte des Eisenbahnwesens."

afterward, not only in Prussia, but, with slight modifications, in the other German states, so far as the latter had permitted the construction of private roads. All such roads, therefore, were at that time, as they had been from the beginning, under a very powerful control on the part of the state governments, and were not only required, but were themselves anxious to comply with the severest demands of the public with respect to safety of operation.

But, on the other hand, and contrasting with these severe obligations, the railroads possessed extensive powers and privileges.

High Position of the Private Roads.

By virtue of the state control to which they were subjected, — which extended also to the regulation of rates, — as well as by virtue of the law which provided for the publication of their annual accounts, — and stimulated moreover by the example of the state roads, the private roads came to occupy a very high position in the public estimation. In fact, scarcely any difference could be observed between the private and the government roads, and both appeared to be state institutions, for which the German people have an inherited respect.

Police Power of the Railroads.

The corporations were, moreover, from the very beginning, provided with very extensive police power within the limits of their own property and jurisdiction. In Germany it is not only generally looked upon as an offence, and known to be punishable, to enter upon property belonging to another, but it is strictly forbidden to enter without permission upon the right of way of railroads outside of grade crossings and station platforms, or to cross the tracks at grade crossings, if the gates are closed. Offences of this kind are severely punished. Everybody in Germany, therefore, from childhood up, knows that he runs a great danger, and renders himself liable to a considerable fine, by going on to the right of way, or upon the tracks; or by undertaking, after leaving a train, to go diagonally across the station or along between the tracks instead of taking the prescribed exit from the station platform to the street. Every brakeman, station employee, or flagman has in such cases the right, as a member of the railroad police, to arrest the offender at once, and to conduct him to the nearest police station, unless the offender is able to give satisfactory proof of his identity, and to deposit security equivalent to the amount of the fine to which he is subject. In the case of roads with a heavy traffic, and especially at and in the neigh-

borhood of stations, it is in fact almost impossible, on account of the strict supervision, and the large number of employees of the railroad, for anybody to infringe these rules. People have, therefore, been from the beginning accustomed not to undertake to do it, and they look upon the railroad property, as it were, with a certain respect, and as something which they are not to meddle with or intrude upon. Isolated exceptions of course occur, sometimes through carelessness or drunkenness, and sometimes, also, through rowdyism.

B. Authority of the Imperial Government.

The Constitution of the North German Confederation, of the year 1867, and particularly the Constitution of the German Empire, adopted April 16, 1871, brought about a considerable change in the basis of railroad law in Germany. Up to that time the governmental control over the railroads had been exercised independently by all the numerous German states, and in consequence thereof the larger railroad corporations had become very powerful, notwithstanding such control and the many duties and obligations imposed upon them Moreover, very much still remained to be desired with respect to the important matter of unity in operation. At the founding of the North German Confederation, and afterwards of the Empire, in recognition of these pressing needs, it was at once proposed to transfer the governmental control over the railroads, in certain important directions at least, to the central power; and in the Constitution of the Confederation, and afterwards in that of the Empire, this was carried out.

The reasons which made it appear necessary to concentrate, so far as possible, the control of the railroads in the hands of the Empire, were, in the first place and principally, political and strategical, in order that the central power might be strengthened and the defence of the Empire rendered more easy; and, in the second place, the necessity for systematic and uniform regulation of the traffic. To be sure, the "German Manual of Commercial Law" (Deutsche Handels-Gesetzbuch) of June 5, 1869, and in connection therewith, the traffic regulations issued by the German Railroad Union, had already proposed certain uniform rules and standards having reference to freight traffic; but these, however, could only be considered as provisional and but partially effective.

Provisions of the Constitution of the Empire.

The Constitution of the Empire provided, among other things (in Art. 4, No. 8), that the entire railroad system should be made

subject to the supervision and to the laws of the Empire, and it was only in the case of the Kingdom of Bavaria that certain special powers were reserved to the local governments [Art. 46]. The seventh section further specified a series of special powers intrusted to the Empire, all coupled with the single condition that all measures must be judged necessary for the defence of Germany, or in the general interests of traffic [Art. 41]. In this way, gradually, rates were supervised, with the object of securing the greatest possible uniformity and reduction, and general rules governing traffic and railroad police were introduced. The governments of the separate states were required "to allow the German railroads to be managed as a single system for the benefit of the general traffic" [Art. 42]. In the same way the railroad corporations were required "to allow the annexation to their systems, and to assume the management of newly constructed roads" [Art. 41]; also "to prepare through time-tables for passenger travel, to allow the transfer of rolling stock from one road to another" [Art. 44], etc. To supervise the carrying out of any statutes enacted by the Empire, the Imperial Railroad Bureau was founded by the statute of June 27, 1873.

Regulations based upon the Constitutional Provisions.

On the basis of these constitutional provisions, the following regulations were enacted by the Bundesrath and issued by the Chancellor, with respect to roads of the first class, or primary roads. These regulations are now in force throughout the Empire: —

1. Police Regulations, issued June 3, 1870; newest edition that of Nov. 30, 1885.

2. Traffic Regulations, issued June 10, 1870; newest edition, May 11, 1874, but with numerous supplements.

3. Signal Rules, issued Jan. 4, 1875; newest edition, Nov. 30, 1885.

4. Standards for the Construction and Equipment of German Railroads, issued June 12, 1878; newest edition, Nov. 30, 1885.

With respect to the supervision and fencing-in of the right of way, as well as the protection of grade crossings, reference may here be made to §§ 4 and 5 of the Police Regulations, which correspond, for the most part, to the requirements which have been enumerated on pp. 110, 111, under *a* to *c*, but which may be here again quoted, in part only.

Police Regulations.

§ 4.

Fencing-in of the Right of Way.

1. Fences must be erected in places where the ordinary supervision of the track does not suffice to keep people or cattle from getting on to the track.

2. Between the railroad and roads which run close beside it, at the same or at a higher level, some means of separation are necessary for safety. At the option of the local government Board, ditches, with the earth thrown up on one side, forming an embankment, may be considered sufficient.

3. Grade crossings of highways must be provided with strong and easily visible gates placed at a proper distance from the centre of the nearest track. Turnstiles may be placed beside the gates for the use of foot passengers. In the case of remote grade crossings, used only by pedestrians, the local government Board may permit the use of turnstiles, or gates which close automatically, instead of ordinary gates.

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5. Gates operated by wires from a distance must be such that they can be opened and closed by hand. Every crossing with such gates is to be provided with a bell, which must be rung before the gates are shut. Gates operated from a distance of more than 164 feet (50 metres) must be limited to crossings of highways on which there is not much travel, and must be within sight of the tender who guards them.

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§ 5.

Supervision or Guarding of the Track.

1. The tracks must be watched as long as trains or wild engines are expected.

2. Every section of the track must be inspected by the watchman at least three times during the day. Exceptions to this rule may be permitted by the authorities in the case of certain lines with small traffic. Dangerous places are to be continually watched.

3. In inspecting, particular attention is to be paid to condition of the switches.

4. Gates at crossings are to be closed at least three minutes before the arrival of a train. This limit cannot be shortened without permission of the authorities and the approval of the local government Board.

5. Gates at private crossings which are not particularly guarded are to be kept locked.

6. Gates at grade crossings where the travel is small may be kept locked, if permitted by the local government Board. They are to be opened at the request of persons desiring to pass. For this purpose each of these gates, including those operated from a distance, is provided with a bell signal by means of which a passer-by may request that the gates be opened.

7. Grade crossings at stations are to be guarded.

8. The work of guarding the gates, if separated from that of track inspection, may be intrusted to women.

9. During the night, grade crossings of highways or streets are to be lighted as long as the gates are closed.

10. During the night, the approaches and platforms at stations must be lighted at least half an hour before the arrival or departure of each passenger train.

With regard to these rules, it may be remarked that the distance of the gates from the centre of the nearest track, referred to in § 4, No. 3, is generally taken at only about 10 feet (3 metres), whereas it should really be made about 25 feet, in order that vehicles which may be caught between the gates should still have sufficient room between the gates and the track to save themselves. [T. V., § 47.]

With regard to § 4, No. 5, it is of special importance that the bell should ring at least thirty to forty seconds before the closing of any gate operated from a distance, and with perfect certainty; that is, independent of the will of the tender, and by the first movement of closing. Further, that any opening of the gates by persons passing shall be acoustically made known to the tender without fail, so that he can at once shut the gates again from his station, since the gates, when opened in this way by anybody, will remain stationary, not closing automatically. It is also necessary that they shall, under no condition, not even by fracture of the wire rope, close suddenly. All these requirements have for years been laid down by the government. There are, therefore, in Germany a great many forms of these wire-rope gates, some very complicated in arrangement. Within a short time, however, all the above requirements have been fulfilled in a simple way by the use of a double wire rope, an example of which may be found in the Schubert wire-rope gate. In cases where it is necessary to provide against the passage of small animals or of children, the space under the boom or gate proper is filled with lattice work, which can be so arranged that it shuts up when the gate is opened, or rotates 90° into a position parallel to the highway.

The Police Regulations contain further, in §§ 53 to 69, the rules for

the government of the public, particularly with regard to entering upon the railroad property and opening or climbing over gates, together with the penalties imposed for violations of the rules, and a statement of the powers, authority, and duties of the railroad employees who constitute the railroad police. These rules agree throughout with the principles which have been above explained, and which have been in force for a long time. Section 66 specifies the employees of the road who constitute the railroad police. The following is an abstract of the principal of these rules: —

Regulations for the Public.

§ 53.

Passengers and the public in general must conform to the general rules of the road, and obey the orders of the railroad police.

§ 54.

1. No persons, except the proper officials or the employees of the road, are allowed on the track, embankments, bridges, or other works without special permission.

2. The public is only allowed to cross the tracks at crossings, and then only when the gates are open. At crossings with turnstiles or automatic gates the tracks must not be crossed when a train is in sight.

3. In every case unnecessary delay is to be avoided.

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5. The public is forbidden to open the gates, to disturb or climb over the fences, or to lay or hang anything upon them.

§ 55.

1. No persons except the proper officials are allowed without special permission in any portions of the stations except those regularly provided for the accommodation of the public.

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§ 58.

Private crossings can only be made use of under conditions imposed by the proper authorities.

§ 59.

When the gates at grade crossings are closed, or when the bell is ringing, all vehicles and animals upon the highway must be brought to a stop at the sign-post. Pedestrians may come up to the gates, but are not allowed to open them.

§ 62.

Any infringement of these regulations is punishable by a fine not exceeding 100 marks ($25), except in cases where the law specially provides for a more severe penalty.

§ 63.

All railroad employees belonging to the railroad police* have authority to arrest anybody who infringes the rules.

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§ 65.

A copy of these rules must be posted in every waiting-room, and there must, further, be at each station a book in which the public may enter complaints.

§ 72.

The execution of the foregoing rules for the safety of traffic is intrusted to the management of the railroad and to the local government Boards.

C. Origin of the Secondary Roads.

It was not until toward the end of the decade 1860–1870 that it began to be more and more felt in Germany that the dangers incident to railroad operation could be very much reduced by a reduction in the speed of trains; and that it might therefore be allowable, under certain conditions, to omit the continuous supervision and fencing-in of the road, as well as the protection of grade crossings, or at least to limit such protection to particularly dangerous places, so that in this way the cost of construction and maintenance could be diminished and railroad facilities provided for the less productive regions which, on account of the expense, had hitherto been deprived of them.

Before the year 1870 there had been built in Germany only a few small and isolated secondary roads, not always designed at the beginning for passenger traffic, such, for example, as the narrow-gauge Broelthal road for the transportation of ore, built in 1864, but not used till 1870 for passenger traffic; further, a total of only about 30 miles (48 kilometres) of normal-gauge secondary roads. Such lines, however, began to increase gradually in number, at first particularly is south and middle Germany (in Bavaria by virtue of a law regarding local roads, enacted April 29, 1868, and July 10, 1870).

In the year 1876, the German Railroad Union published "Standards for the Construction of Secondary Roads," and fixed therein,

* Including almost all employees.

besides the normal gauge of 4 feet 8½ inches (1.435 metres), the two standard narrow gauges of 1 metre and 0.75 metre. Secondary roads were further distinguished, with regard to speed, into normal-gauge secondary roads, with a maximum speed of about 25 miles (40 kilometres) per hour, and normal-gauge secondary roads with a maximum speed of about 9.5 miles (15 kilometres) per hour. These last were again distinguished according as they did or did not take rolling stock from the primary roads; in the first case the radii of curves was not to be less than 150 metres (500 feet), while in the case of primary roads it was not less than 180 metres (600 feet).

In case the speed was limited to about 19 miles (30 kilometres) per hour, the fencing-in and guarding of right of way and the protection of grade crossings were to be limited to particularly dangerous places; and with a speed of 9.5 miles per hour they could be entirely omitted.*

Soon afterward, on May 10, 1877, the Prussian government prescribed "Safety Regulations for normal-gauge roads of secondary importance." These, however, were soon superseded by the "Rules for German railroads of secondary importance," issued by the Imperial Chancellor, June 12, 1878. This furnished a legal basis for the whole of Germany, with relation to the secondary roads, and from it dates the real development of such roads in Germany.

The multifarious distinctions of the "standards," particularly the threefold one in regard to velocity, were here replaced by simpler specifications, but the three gauges of 1.435, 1, and 0.75 metres were retained as standards. The heaviest grade is fixed at one in 25 [§ 2], and the smallest radius of curvature, in the case of normal gauge, at 100 metres (328 feet). The speed must not under any circumstances exceed 30 kilometres per hour (18.7 miles); within this limit the maximum speed allowable in each case is to be fixed by the local government Board [§ 27]. Fencing-in and continual supervision of the track, as well as the protection of grade crossings, may in general be entirely omitted if the maximum speed is less than 15 kilometres (9.3 miles), and with a maximum speed between 15 and 30 kilometres, they may be limited to particularly dangerous places [§§ 21 and 7]. Nevertheless, the government Board decides with regard to the necessity of gates at crossings, as well as of fences between any railroad and a highway running close beside it [§ 7, Sect. 1].

With regard to grade crossings provided with wire-rope gates, the same requirements are enforced [§ 7, Sect. 3] with regard to opening, and with regard to the ringing of the bell beforehand, which are given in the P. R. [§ 4, Sect. 5] for primary roads.

* §§ 27, 28, 82.

For grade crossings without flagmen, the locomotives must be provided with bells which can be heard a considerable distance [§ 12]. If the velocity exceeds 20 kilometres (12.5 miles) per hour, then the road must be inspected at least once a day [§ 21]. Paragraphs 43–53 then contain conditions corresponding generally to those of the P. R. [§§ 53–72], with respect to the public, the railroad police, etc.

Based upon these regulations, which rendered possible a very considerable decrease in the cost of construction and operation, a number of secondary roads were at once constructed. At the same time, many railroad corporations hastened to have a number of their existing branch lines changed to secondary roads, which could be done, according to § 74 of the P. R., by consent of the proper local Board, with the approval of the Imperial Railroad Bureau.*

Extent of the Secondary Roads.

According to the statistics of German railroads (prepared and published annually by the Imperial Railroad Bureau), the extent of the railroad lines in Germany at the close of the operating year 1886–87 was as follows: —

1.	Primary roads	19,125 miles	(30,748 kilometres).
2.	Normal-gauge secondary roads .	4,541 "	(7,301 ").
3.	Narrow-gauge secondary roads .	347 "	(558 ").
	Total	24,013 "	(38,607 ").

This table does not include the branch roads not designed for public traffic, but used for transporting ores and lumber, with a total mileage of about 1,262 miles.

D. Transfer of the Railroads to the States.

Before we consider the statistics of accidents, and the methods now employed in apportioning the cost of separating grades in cases undertaken after the construction of the railroad, it may be well to continue, down to the present time, the review of the historical development in relation to the rights and responsibilities of the railroads, so far as they are here of interest. For this purpose, it remains to mention the change which has lately taken place in several German states, notably, however, in Prussia, by which the private roads

* In 1887 a revised edition of the "Standards" was published by the German Railroad Union, in which secondary roads are further distinguished into *secondary* roads proper, with a speed of not over 40 kilometres, and *local* roads, with a speed of not over 30 kilometres. These distinctions, however, which in some respects do not agree with the government regulations, have not been observed.

have, for the most part, passed into the control of the states. It has already been mentioned, in considering the responsibilities of the railroads, that the private roads in Germany, and particularly in Prussia, were subject from the beginning to a very considerable oversight and control by the state authorities, and that in the course of time their independence became more and more limited. It was, therefore, very natural that the tendency toward the formation of private companies for the construction of new lines should gradually diminish, and that — especially in Prussia — the government should itself more and more undertake the construction of the railroads. Since 1850 the Prussian government has, in the case of various companies, at first assumed the management and then taken absolute possession, and by 1850 it had begun to build its own lines, which were largely added to by the annexation of extensive new provinces in the year 1866. In the year 1868 the mileage of German roads was

State roads	4,709 miles.
Private roads under state management . .	1,319 "
Private roads not under state management .	4,152 "
Total	10,180 "
Of these there were in Prussia	6,298 "
And in the rest of Germany	3,882 "

At the formation of the North German Confederation and of the German Empire, certain important powers were given to the central government, while others remained with the separate states. Many inconveniences necessarily grew out of this condition of things, since the management and operation of the railroads, or at least of those which lay in several different states, could not be conducted with the necessary unity. In addition to this, the competition between the different roads, each of which naturally sought its own interest rather than that of the public, gave rise to many complaints, and even the roads themselves suffered from the excessive competition. Even the regulations of the German Railroad Union and the various orders issued by the North German Confederation and by the Empire by no means sufficed to silence all the legitimate complaints, particularly those of the merchants.

These conditions resulted in the preparation of a provisional draft for a general railroad law for the Empire, which, after a long preparation by the Government Bureau of Railroads and by a commission appointed from the Reichstag, was published first in the year 1874, and, with some changes, in the following spring. But even this draft treated only the general principles of the public law, and left to

the separate states the enactment of statutes providing for their execution; matters of private law, though taken up at first, having been finally left out.

The draft never became a law, partly because in the Bundesrath and Reichstag it appeared to meet with little favor, but particularly because it was felt, by those most conversant with the matter, that the endeavor should be to effect a much more complete centralization of the entire railroad management in the hands of the Imperial government; indeed, that if possible, all the railroads should be actually owned by the Empire. Expression was first given to the efforts in this direction by the enactment of the Prussian law of June 4, 1876, which empowered the Prussian state government to transfer to the Empire, for a suitable consideration, all the railroads which it possessed, together with all its rights and powers over private roads. At that time the mileage of normal-gauge roads (including secondary roads) was as follows: —

	In Prussia.	In the rest of Germany.	Together.
	Miles.	Miles.	Miles.
Government roads	2,641	4,859	7,500
Private roads under state management .	1,702	397	2,099
Private roads not under state management .	5,881	1,923	7,804
Total	10,224	7,179	17,403

It was hoped that this example of the willingness of the largest German state to transfer its roads to the Empire, with the help of public feeling, would exert a sufficient moral pressure upon the other German states to induce them to follow of their own accord the example so set.

The latter, however, and therefore their representatives in the Bundesrath, evinced a decided disinclination to surrender such important powers, and, in consequence, further steps in this direction were for the time being abandoned. For, although, according to Art. 4, No. 8, of the Constitution, the railroads were in every respect subject to the laws of the Empire, so that any further action through the medium of Imperial legislation would have been undoubtedly constitutional, nevertheless any steps in the direction indicated would have been severely contested in the Bundesrath, and moreover, it was important to avoid anything which was in the nature of coercion towards the separate states.

But in Prussia, on the contrary, the transfer of the remaining private roads into the control of the state was all the more energetically

undertaken, perhaps in order to prepare the way better for a subsequent transfer of the railroads to the Empire.

In this way, gradually, by Prussian laws passed in 1878, 1879, 1880, 1882, 1884, and 1885, almost all the larger railroad lines, not only in Prussia itself but throughout the whole of north and middle Germany, with the exception of Saxony and Mecklenburg, were transferred to the possession and management of the Prussian government. With regard to the rest of Germany, it may be remarked that several of the other governments, notably those of Saxony and Bavaria, following the example of Prussia, have begun to transfer the private roads into the possession of the state; so that, of the 23,666 miles of German railroads, at the present time only 2,815 miles are still under private management, and even these are largely dependent upon the state governments. The roads in Alsace and Loraine were transferred immediately upon the acquisition of these territories into the possession of the Empire for the price of about $78,000,000 (325,000,000 marks). Since then they have been considerably extended, and form now a system with a total mileage of 814 miles, and a total cost of construction of about $112,650,000 (469,378,000 marks).

According to the latest published statistics of German railroads at the end of the operating year, 1876–77, the condition was therefore as follows: —

April 1, 1887, the mileage and cost of construction of all normal-gauge primary and secondary roads was: —

	In Prussia.*		In the rest of Germany.		Together.	
	Miles.	Mil. Dol.	Miles.	Mil. Dol.	Miles.	Mil. Dol.
1. Government roads .	13,526	1,416.959	7,154	746.778	20,680	2,163.737
2. Private roads under state management .	139	13.053	32	4.084	171	17.137
3. Private roads not under state management	1,132	55.261	1,683	120.195	2,815	175.456
Totals	14,797	1,485.273	8,869	871.057	23,666†	2,356.330

Hence the average cost of construction per mile is $62,146.

* In this are included those portions of the Prussian state roads which are really outside of Prussia, for example, Brunswick and Thuringian roads.

† Of this total 6,863 miles are double track (6,538 miles of state roads and 325 miles private roads).

According to the above table, the private roads under their own management represent in Germany only about 11.9 per cent of the mileage and only about 7.45 per cent of the total cost of construction; while in Prussia alone they represent only about 7.65 per cent of the mileage and only 3.72 per cent of the total cost of construction. It is evident from this that in Germany (and particularly in Prussia), at the present time, the management of the railroads constitutes a very important function of the government. In this way the power of the railroad corporations as against the public has increased enormously; but on the other hand, it is subject to the control offered by complete publicity through the press and the yearly legislative discussions regarding the budgets, which are subjected to a very careful scrutiny, in the course of which opportunity is offered for bringing up and justifying any kind of complaint. Moreover, in Prussia the law of June 1, 1882, provides for the formation of a so-called General Railroad Board, and several territorial railroad Boards, which consist in part of chosen representatives of the various industries, of trade, and of farming. These meet at least twice a year, and are authorized to make any recommendations which appear for the public interest, particularly with regard to transportation and rates.

In this way the government railroad corporations are not only required but are themselves striving to satisfy all reasonable demands of the public, especially if such demands have reference to the public safety. It is to be added that notice of every accident by which any person is killed or seriously injured must be at once telegraphed to the state authorities, to the ministry, and to the Imperial Railroad Bureau, and that a very searching judicial investigation follows.

Moreover, according to the Imperial law of June 7, 1871 the railroads are liable for very considerable damages in any case in which it cannot be proved that the entire fault lay with the person who was injured or killed.

Since the beginning of the government management of the railroads in Prussia, it has been the highest endeavor of the authorities to satisfy the wishes of the public, as is happily recognized on all sides.

E. Present Methods of apportioning the Costs in separating Grades.

1. *In the Construction of New Railroad Lines.*—It has already been explained that the state ministries and their executive organs, the local government Boards (in Prussia the thirty-seven territorial government Boards) are authorized, in the case of new construction and subsequent extension of railroad lines, to require the companies to

carry out at their own expense all works which are considered necessary by said Boards. This provision, found in the Prussian Railroad Act of 1838, § 14, was later expressly confirmed in the Prussian Expropriation Act of June 11, 1874, § 14, with the following addition: "He" [the projector of the railroad] "shall also be required to *maintain* said works, in so far as they serve no further purpose than is subserved by the existing works, for the maintenance of which he is already responsible."

"The territorial government Board is to decide with regard to his duties in this respect."

From the decision of said Board there is no appeal, except to the minister, and not by process at law, unless the rights of private persons are affected.

The territorial or local government Boards have in the first place to look out for the public interests as against the railroads, but can also upon request extend their jurisdiction to the special interests of the counties and towns, or even of private persons. They can therefore consider questions regarding highways, so far as these are not under the supervision of other Boards. In Prussia, however, matters regarding highways are under the independent supervision of the Boards of Highway Commissioners, which are made up of officials of the cities or towns, counties or provinces. From the decisions of these Boards there is only one means of appeal, specified in the statute of Aug. 1, 1883, with regard to the extent of authority of such Boards.

If the abolition or alteration of a public way is proposed, the Board of Highway Commissioners issues a notice of the proposed change, giving four weeks in which any objections are to be brought, and then renders a decision. If the decision is in favor of the proposed change, objectors thereto have one means of appeal, as referred to above; if, however, the decision is against the proposed change, the only appeal is to the ministry.*

A process at law before the courts is excluded in the case of all public matters of this kind, and is only made use of in the case of private claims for damages.

It is the duty of the local or territorial government Boards, as soon as the plans of a new line are prepared, to see that in the case of each highway it is distinctly decided whether the same is to be considered as a public way, and who is to be responsible for its maintenance, in order to avoid as far as possible subsequent disputes regarding the latter. [Prussian Ministerial Order of Nov. 5, 1880.]

* See Endemann, "Das Recht der Eisenbahnen," Leipzig, 1886, p. 343.

For, although in the case of new constructions or extensions, as we have seen, the local government and highway Boards can require the railroad companies to carry out at their own expense all necessary works, or to separate the grades at highway crossings, this is not true with regard to the MAINTENANCE of the highways. The latter, on the contrary, according to the provision quoted above, in § 14 of the Prussian Expropriation Act of June 11, 1874, is only to be borne by the railroads in so far as the latter are considered by the above Boards to be the owners of said highways. But so far as a highway as altered serves only to replace one already existing, the maintenance remains the duty of the party which up to that time has performed it, — of course with the exception of the portion directly over the tracks.

It may also be remarked here that the same is true with regard to the approaches to stations. Whereas, formerly, these were almost always considered to be the property of the railroads, which were therefore required to maintain them, the maintenance has lately been considered (in application of the above-quoted provision) to be partly the duty of the towns. Cases have indeed occurred in which the railroads have located their stations without any approaches whatever, and left the construction of the latter entirely to the towns, — and this not illegally. As a rule, however, these expenses are divided between the road and the town by agreement, by which the roads are generally required to maintain the real grounds about the station, as well as the flower garden or grass plat, which is seldom absent.

Before any railroad project is carried out, opportunity must be offered to all the Boards, towns, and private parties interested, to acquaint themselves with the same, and to offer any objections thereto.

For this purpose (according to §§ 18–22 of the Prussian Expropriation Act), after a previous public notice, the proper drawings (in Prussia to a scale of at least 1 : 2500) must be publicly posted or placed in every town and district so that they are accessible to anybody, for a period of fourteen days. A hearing is then held under the direction of a member of the local government Board, which in the mean time has examined the project in detail. At this hearing any interested party may be present, and offer objections. The local government Board then renders a decision in the case, and although, as above described, there is a possibility of appeal from each decision, it is only made use of by the railroad companies in important cases.

Before the Board grants permission to open the road, a second

hearing is held for the purpose of deciding whether the road has been built in strict conformity with the plans, and with the observance of the requirements of the Board.

2. *In the Subsequent Alteration of Highways.* — We have seen that at one time the railroads were frequently required to carry out certain alterations at one part of their line, as a condition coupled with the permission to execute other works which they desired to carry out at an entirely different place, and having no connection whatever with the first. This does not now often occur, even in the case of private roads, and in this respect the present practice is much more just and equitable.

In the case of subsequent alterations of highways, and in particular in the separation of grades, at highway grade crossings, the cost of construction is laid entirely upon the railroads, PROVIDED:

(*a.*) The change is rendered necessary by alterations or extensions of the railroad property (as above).

(*b.*) That it has been finally decided by the proper Boards and authorities (if necessary after appeal) that the alterations are solely or principally for the benefit of the railroad.

(*c.*) That they are rendered necessary solely by the increase of railroad traffic.

But in this case, as before, the cost of maintenance, in so far as new roads simply take the place of old ones, is borne as before the alterations.

If it is decided, however, that the contemplated alteration of the highway is not rendered necessary by the increased traffic of the railroad, but, on the contrary, solely or principally by the increasing highway traffic, by the growth of the city, etc., then the railroad must *execute* the work, but the cost is borne entirely by the interested parties.

Such cases, however, are rare, since, as already explained, it is almost always the case that the separation of grades is equally in the interest of the railroad, particularly when otherwise the number of gate tenders and the cost of maintaining the grade crossing would have to be increased

Further, it frequently happens that in such cases an enlargement of the railroad station or yard or an increase in the number of tracks over the crossing is desirable for the operation of the road; and finally, it is the most earnest endeavor of the railroads to avoid any injury to persons at grade crossings, partly for reasons which have been explained and partly on account of the tedious investigation which follows.

In most cases of this kind, therefore, a division of the cost is

decided upon by agreement; but the number of cases of the first kind is much greater, in which the cost of construction is borne entirely by the railroad and only a part of the cost of maintenance by the towns.

With regard to the means employed for diminishing the danger and interruption to traffic at grade crossings, it has been common, in the first place, in cases where the highway traffic was large, and where an increase in the service or improvements in the gates * did not suffice, to make use of foot-bridges over the tracks, or less frequently, of tunnels under them. Experience soon showed, however, that these bridges or tunnels were very little used, as people generally preferred to wait, in the hope of seeing the gates opened at once, and when they were at last opened, after being closed for some time, the accumulated stream of wagons and pedestrians together was even worse than before.

In such places it was soon found necessary, as a rule, to undertake a complete separation of grades, both for foot passengers and for vehicles, in the majority of cases by carrying the streets *underneath* the railroad, at the same time often raising the tracks.

Indeed, the dangers, delays, and interruptions to traffic caused by grade crossings, particularly in the case of the primary roads, and at stations where trains are continually arriving and leaving, and where switching operations have to be carried on, and at the same time the necessity for the increase and extension of station and yard facilities, have given rise in late years, and particularly in Prussia since the railroads were transferred to the state, to the reconstruction of a large number of extensive stations. Many works of this kind are now being carried out, in which the following principles are strictly observed from the beginning: —

1. The complete separation of the tracks from all street or highway crossings, often with a roadway of very considerable width and for a distance of many miles, at the same time, however, providing frequent means of communication with the streets.

2. Strictly preventing the travelling public from crossing the tracks at all, or in other cases restricting such crossing to at most one track.

The erection of these works in conformity with the above requirements has naturally necessitated very large expenditures, since in most cases it has been necessary to elevate the entire station and yard above the streets, thus requiring considerable embankments, extend-

* In the case of crossings with gate tenders, gates which slide horizontally are used, as well as those which revolve vertically. In case where gates are operated from a distance, only those which revolve vertically [like our ordinary gates] are used. Gates which revolve horizontally are not in favor, since in opening they require too much space, which is in many cases already crowded with people.

ing sometimes for long distances, and supported by retaining walls, together with numerous bridges crossing the streets. In several cases, although more seldom, the railroad has been carried on a lower level than the streets, and the latter carried over the tracks.

At the same time care is taken that the main tracks of railroads which intersect each other do not cross at grade, but are made to cross at different levels outside of the stations. All of the railroads centring in the town, however, are generally carried into a union station; or, if that is not possible, convenient track connections are made for freight traffic and for the transfer of entire trains from one line to the others. [P. R., § 3, Sect. 8, and § 27.] It may here be remarked that grade crossings of railroads adjoining stations are extremely rare in Germany, and will almost completely disappear after the completion of the station works which are now in progress.

As examples of a few such extensive works for the reconstruction of stations, carried out very recently on the state roads of Prussia, and to give an idea of the large expenditures or appropriations to which they have given rise, we may mention the following: — *

Station at Hannover, completed 1877,	$4,700,000.†
" " Hildesheim, " 1884,	636,000.
" " Düsseldorf, now in progress, estimated	3,900,000.
Station at Halle, now in progress, estimated	2,400,000.
Station at Bremen, now in progress, estimated	2,280,000.
Station at Erfurt, now in progress, estimated	1,488,000.
Station at Münster, now in progress, estimated	840,000.
Station at Cologne, now in progress, estimated	5,880,000.
Station at Frankfort-on-the-Main, just completed	5,964,000.

See plans of some of these stations at end of report.

In this connection should also be named the Berlin city road, built as an elevated road, at an expenditure of $16,300,000, and opened in 1882. Another very extensive station is at the present time in contemplation by the Prussian state road for the city of Hamburg, in order to provide a union station, and, at the same time, abolish all the grade crossings of streets.

Such extensive alterations or reconstruction of stations are in

* See Grüttesien, in the "Centralblatt der Bauverwaltung," 1888, p. 349.

† Figured on the basis of one mark to about twenty-four cents, and given in round numbers.

some cases carried out on the site of the old station, in others in entirely new locations. In the last case the large expenditure is sometimes made up to a considerable extent by the sale of the old property. Thus the receipts from such sales are estimated at Düsseldorf at $1,440,000, and at Frankfort-on-the-Main at $4,560,000. Nevertheless, the sums expended by the government for these purposes are still very large, and the amount appropriated for them since 1876, exclusive of the Berlin city road, is over $24,000,000 [100,000,000 marks].

Similar large station works have in recent years also been carried out in other parts of Germany, as, for example, in Mainz, Strasburg, and Munich; and others are now in progress, as, for example, in Leipzig, and elsewhere.

In the case of these large reconstructions the cost is borne entirely by the government; although, where private roads are interested, they of course share the expense. Only in rare instances have the cities in question contributed — and then only comparatively insignificant sums — in cases where, after completion of the plans, they desired to have some particular works carried out entirely for their own interest. For example, in the case of the reconstruction of the stations at Düsseldorf, Erfurt, and Frankfort, the original project provided for the separation of grades in the case of all existing streets, but, subsequently, in each case one additional overhead crossing was provided at the expense of the city in question, for a new street which it was proposed to lay out.

At the present time, therefore, it is the earnest endeavor of the government management, even at great expense, to provide for the safety of the public at streets and stations, and at the same time to increase the safety of railroad traffic, and to relieve the railroad officials, particularly at stations where there is a large traffic, from responsibility for the safety of the public.

F. Injuries to Trespassers and at Grade Crossings.

In the above description of the duties and privileges of the railroad corporations, as well as of the laws relating thereto, it was explained in detail that every possible precaution is taken to insure the public safety, particularly in the case of the primary roads: on the one hand by fencing in and guarding the track, and by gates at grade crossings, and on the other by giving the railroad corporations a considerable police power.

It was also mentioned that the railroad corporations themselves are particularly anxious to avoid any serious accidents, by reason of the

necessity of reporting all such cases, the strict provisions regarding liability for damages, and the tediousness of the judicial investigations. Nevertheless, complete immunity from accidents can of course never be attained.

We shall only consider here such accidents as involve injury to trespassers or at grade crossings.

1. Injuries to Trespassers.

Cases of this kind are extremely rare throughout Germany, and are, therefore, not particularly specified in the railroad statistics prepared in the Government Railroad Bureau.* In view of the conditions which have been described, it is almost never that anybody, with the exception of officials and employees, knowingly walks along the track. On the other hand, however, it occurs once in a while that people on foot or even in vehicles, on dark nights, and particularly if it is foggy or snowing, lose their way and start along the tracks *by mistake* when crossing them at a grade crossing, instead of crossing over and proceeding along the road or highway. This may particularly occur when the angle between the railroad and the highway is very acute.† These cases, of course, are particularly apt to occur when persons either intoxicated or asleep attempt to drive across the tracks, and instead of looking out for the road let the horses go their own way. Such occurrences can, of course, give rise to serious accidents, but they seldom occur.

Neither are there, in general, many accidents due to unauthorized crossing of the tracks. In the case of secondary roads not fenced in, people do often cross, but in this case the danger is less on account of the low speed (9.3 to not over 18.7 miles per hour), and the ringing of the bell on the locomotive. In the case of primary roads, all crossing of the tracks is, in general, sufficiently prevented by the fences or ditches, by the supervision which is exercised, as well as by the public sense of the danger and of the liability to punishment.

In a few of the coal-mining districts it indeed frequently happens that people make their way across the tracks, even breaking down the fences, in defiance of the supervision which is exercised and of the punishment to which they render themselves liable, in order to get home more quickly from their work. In these districts the railroads are numerous and form a complicated system; and moreover, the working classes are very rough, and their dwellings are scattered all over the region, often built in the fields without any regular means of approach. In such localities, accidents due to crossing the tracks

* Published annually at Berlin (Mittler & Son).

† On this account, the T. V., § 33, provides that the angle shall not be less than 30°.

frequently occur. It is considered, however, that these isolated cases, due entirely to the fault of the persons injured, constitute a less crying evil than the frequent arrests which would result from the endeavor of the watchmen to continually keep people off the track by force; especially since in these districts any exercise of force would only be possible if fully armed, and, by engendering bad feeling on both sides, might easily lead to a still worse condition of affairs. There is therefore in this case a sort of silent sufferance, and up to a certain point trespasses are winked at. Nevertheless, such cases, as already noted, occur very seldom in Germany.

A right of way by more than a certain number of years' use, however, cannot possibly be acquired in such a case, — entirely independent of the fact that the offence is occasionally punished, — since the laws which are transgressed have *public* validity. According to German laws, a right can never be acquired by custom if it involves a breach of the public laws, or if it involves an offence punishable according to criminal law. It can be acquired if it involves only a breach of the private law.

The statistics of the railroads of Germany state only the total number of trespassers injured, that is to say, of those who are designated as "private persons," and who are neither travellers, officials, or other employees of the road in service. In the operating year 1886–87 the total number killed was 176, and injured 131, on the total length of 23,666 miles of normal-gauge German roads.* This number includes, therefore, all those "private persons" who were injured at grade crossings and at stations, and the latter form by far the greater proportion of the whole, particularly since the "private persons," such as workmen, truckmen, teamsters, etc., who are engaged in loading or unloading freight at freight stations, frequently transgress the rules and venture on the tracks for various purposes, in this way exposing themselves to danger. Although it is therefore not possible to give exact statistics of the injuries to trespassers along the line of the road, it is nevertheless true that not only is the number comparatively small, but that such cases are only possible through great carelessness or intentional transgression of the rules. Complaints with regard to the existing regulations as to this matter do not occur.

2. Injuries to "Private Persons" at Grade Crossings.

These occur principally when it is dark, foggy, or snowing, and particularly under the conditions noted above, namely, either when persons who are drunk or half asleep fail to see or heed the warning

* Among the killed are included those who died within twenty-four hours.

signals (ringing of the bell at gates operated by wire ropes, or ringing of the locomotive bell in the case of secondary roads without grade-crossing gates) ; or in cases where deaf persons cross the tracks without the proper care, or where people with their heads tightly wrapped up in thick cloths for protection against cold and snow are therefore unable to hear the warning signals.*

For the same reasons, it occurs once in a while that vehicles are shut in between the gates without by any means always causing an accident, since, if the distance between the gates and the tracks is sufficient, safety is often afforded even if there is not time to open the gate and get out.†

The statistics of German railroads give, with regard to this matter, only the number of vehicles run over, and for the operating year 1886–87 there were in all eighty-five cases on the normal-gauge roads. The number of "private persons" injured in such cases, as above mentioned, is included in the total number already given. The author, however, has been enabled to consult a more detailed compilation not yet published, and to take therefrom some figures which give more complete information. For the calendar years (Jan. 1 to Dec. 31) 1885 and 1886 only a summary can be given, but for 1887 and the first eight months of 1888 the tables give very complete information, specifying the results of the accidents and separating the primary from the secondary roads. These statistics, together with the conclusions which may be drawn therefrom for the year 1887, are given in an appendix at the end of this report. The figures given for the mileage, volume of traffic, and number of grade crossings are taken from the published statistics for 1886–87, and refer, therefore, to the first of April, 1887. With the help of these data, the accidents at grade crossings during the year 1887, together with the deaths and injuries resulting therefrom, are given, together with the ratios which they bear: —

(*a.*) To the mileage.
(*b.*) To the number of grade crossings.
(*c.*) To the volume of traffic. [Number of train miles.]
(*d.*) To the total number of "train grade crossings."

* Of late years success has been attained in the construction of automatic signal bells, which, when placed at grade crossings, are rung electrically by the train itself for from one and a half to two minutes before its arrival, and continue to ring until it has passed. With such automatic arrangements, if they are always sure to ring at the right time, it would be possible and allowable in the case of secondary roads to dispense with flagmen at some highway crossings which at present have to be guarded. In the future indeed, were such a system extensively used, an increase of the maximum velocity from 19.7 up to 25 miles per hour might possibly be allowed by the authorities, without any corresponding change in the character of the other specifications regarding secondary roads.

† Gates shut three minutes before the arrival of a train, according to P. R., § 5. (See above.)

These ratios could be determined separately for the primary and secondary roads only in the case of *a* and *b*. In the case of *c* and *d* this was not possible, because the volume of traffic is only given for *all* normal-gauge roads together, only the 347 miles of narrow gauge being separated; so that these ratios had to be estimated taking all the roads together.

With regard to the number of train grade crossings (*d*), the following was the method pursued [appendix, p. 145]: The total number of train miles was divided by the total mileage, in order to obtain the average number of trains over the entire length of road (6,462). This result is then multiplied by the total number (53,474) of all public grade crossings, in order to obtain the total number of train grade crossings. Of these there were, therefore, in round numbers, 344,549,000, and the total number of accidents is to be divided among these in order to obtain a correct notion of the ratio between the accidents and the train grade crossings which give rise to them. This last computation cannot, of course, be quite correct, since in reality the frequency of the crossings is not everywhere the same, so that the average number of trains cannot give quite the right number of train grade crossings. But these variations may be considered to affect the final result only slightly, so that the latter may be considered to give in general a correct notion, although, like all statistical averages, it cannot claim absolute accuracy.

The ratios so obtained may be conveniently collected together here in the following tables.

Summary, 1887.

On 19,125 miles of primary roads with 36,762 public highway grade crossings there occurred 49 accidents, with 5 deaths and 17 injuries.

On 4,888 miles of secondary roads with 1,897 guarded and 14,815 unguarded highway grade crossings there occurred 31 accidents, with 1 death and 14 injuries.

The ratios therefore were: —

No.		Primary Roads.		Secondary Roads.	
		(*a*) Miles of track.	(*b*) No. of grade crossings.	(*a*) Miles of track.	(*b*) No. of grade crossings.
1.	One accident	391	750	158	540
2.	One death .	3,825	7,350	4,888	16,712
3.	One injury .	1,126	2,160	349	1194

Injuries to employees, 1; to passengers, 0. Deaths (of employees or passengers), 0.

On the total mileage of normal and narrow gauge roads (24,013 miles), with 53,474 public highway grade crossings, there occurred 80 accidents, with 6 deaths and 31 injuries.

The ratios therefore were: —

No.		(*c*) Million Train Miles.	(*d*) Million Train Grade Crossings.
4.	One accident	1.94	4.31
5.	One death	25.86	57.43
6.	One injury	5.01	11.11

These results show, among other things, that the frequency of accidents is considerably greater on secondary roads than on primary roads, and the appendix shows further that the number of these accidents on secondary roads is very much larger in the case of crossings at which there are no flagmen than it is in the case of crossings where there are flagmen, as, of course, must be the case. On the other hand, the danger of death, and probably also of serious injury, appears to be very much less in the case of secondary than in the case of primary roads, clearly on account of the smaller speed. On the whole it may be seen from the results under *d* that at any rate the number of accidents, and particularly of deaths, in proportion to the opportunities offered, is very small.

II. MEANS AND METHODS EMPLOYED FOR THE PROTECTION OF THE PUBLIC AT STATIONS.

A. Arrangement of the Platforms and their Approaches in the case of Stations without particularly great Passenger Traffic.

1. General Principles.

The principal rules universally observed in Germany in regard to this matter are the following: —

1. In the case of what may be called way stations, that is to say, stations along the line, and from which no branch line runs, the traffic in each direction has its own station, track, and platform. Even single-track roads always have two tracks and are operated like

FIG. 1

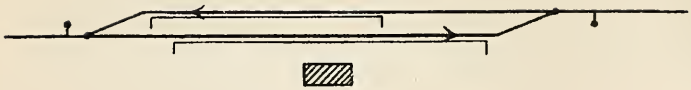


FIG. 2

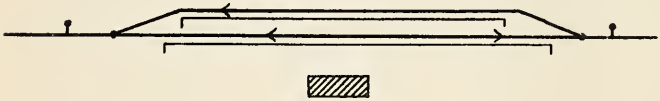


FIG. 3

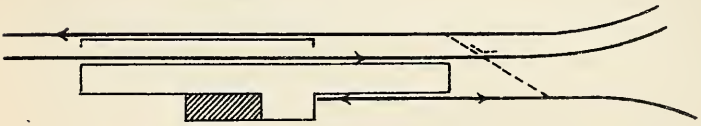


FIG. 4

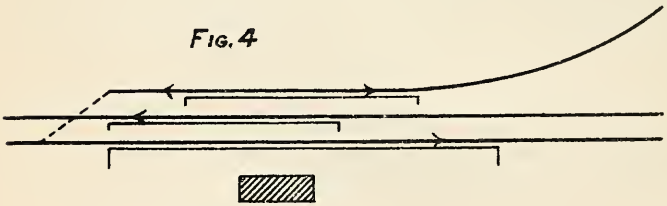
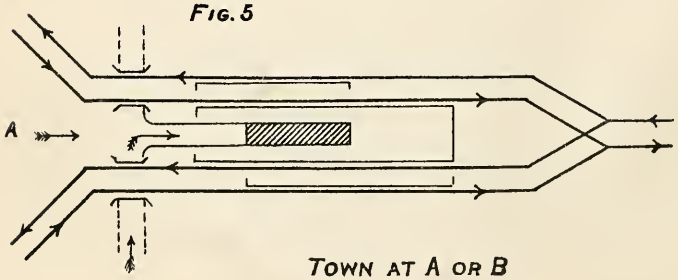


FIG. 5



double-track roads at stations.* Until within a short time it was the rule in this case, at least in Prussia, to separate the two tracks of single-track lines in such a way that the station was entered on the straight track, while in going out of the station the trains trailed through the turnout switch. [See Fig. 1.] Lately, however, this has been given up on account of the improvements which have been made in the construction of switches and signals, and in particular since the interlocking of the switches at the entrance to a station and the signals which cover said station.† It is therefore now allowed to carry the principal track straight through the station, in order that the fast express trains which do not stop may not be obliged to pass through any turnout switches. [See Fig. 2.]

2. Where several roads run into the same station, each is provided with at least one main track with its own platform, so that the simultaneous arrival of trains from all directions may occur without danger. If the roads running into the station are through roads (as, for example, at crossing stations), each of them is treated within the station limits as a double-track road. Branch roads ending at the station, on the contrary, may be brought in with a single track, so that trains arrive and depart on the same track and use the same platform.

3. In cases where trains are at all frequent, except at small flag stations, freight trains are switched off on to separate freight tracks as soon as they enter the station limits. The passenger tracks, therefore, for a considerable distance (within which the platform is placed), are freed from freight trains, either always or during certain times appropriated to passenger traffic.

It was for a long time customary, in the case of small stations, in order to avoid facing points, to back off the freight trains from the main tracks after running them past the station. This practice, however, was the cause of much delay and inconvenience, and has now been given up, principally on account of improvements in switches and signals.

4. The height of station platform above the top of the rail is generally from $8\frac{1}{4}''$ to not over $15''$ [T. V., § 75]. Exceptions occur very seldom.

The edge of the platform is placed $4'\ 11''$ (1.5 m.) from the mid-

* On the German railroads, with a few exceptions gradually disappearing, trains run on the right-hand track. P. R., § 21.

† Every station is enclosed between two signals, which generally stand at danger, and the entrance of a train can only take place with the permission of the station agent. In the case of large stations with heavy traffic, this permission is given from the principal office by mechanical or electrical means. If the grade is heavy or the road such that the station or "home" signal cannot be seen from a considerable distance, it is automatically connected with a distant signal.

dle of the track, and in the case of the principal platform (and the others also where the traffic is large) is kept precisely in position by a carefully laid stone curb (seldom of wood), if necessary with a wall beneath.

5. The approach from the town to the platforms is generally through the station building, leading by the ticket office and baggage-room. The exit from the platforms to the town is generally by the same route, with the addition very often of an exit along the ends of the station building directly from the platform to the street or station grounds, and the same channels may also as a rule serve as approaches for passengers who are already provided with tickets. The point is, however, that the entrance and exit for passengers are strictly confined to a few definite channels. In the case of small country stations, these are not locked as a rule; but, on the contrary, where the traffic is heavy, they are frequently closed by doors or gates and only opened at times. The management is also able to entirely prohibit entrance to the station platforms without a ticket. This, however, is seldom done, especially in North Germany, since the public consider it almost a right to accompany departing friends or welcome arriving ones at the trains. An exception to this is found in the case of the purely local traffic of the Berlin city road (not the through traffic, which takes place on two separate tracks). Here there is no collecting or punching of tickets in the train, it being done entirely at the station platforms, so that, necessarily, no one is allowed on the platforms without a ticket.

6. Any attempt to approach or leave the platforms by other than the prescribed ways, either along the tracks to a neighboring grade crossing, or diagonally along the tracks, is forbidden and can be severely punished. It also renders the offender liable to immediate arrest. [P. R., § 52, 1; 62, 63.]

7. In the case of country stations with light traffic, the platforms are generally separated from adjoining carriage-ways, etc., only by hedges, gardens, or ditches. In larger places, however, they are fenced in on these sides.

8. Exceptions to these general rules may occur at stations where the traffic is very light indeed, and in the case of secondary roads.

2. Arrangement of Platforms at Way or Intermediate Stations.

In the case of way stations the platforms are generally two in number, either both outside the tracks (called outside platforms), or, very much more frequently, indeed generally, so that the first or

principal platform, together with the station building, is on the side of the track toward the town, while the second or *intermediate* platform is between the two passenger tracks, which must for this purpose be spread to a distance of at least 19.7 feet (6 metres) from centre to centre (more commonly taken as 26′–29′, or more). In this case, therefore, one track has to be crossed in order to reach the intermediate p'atform; whereas, in the first case, two tracks must be crossed in order to reach the farther or opposite platform, which is therefore more undesirable.

If a branch road terminates at the station, it is brought in, where possible, to the main platform at one side of the station building [see Fig. 3], so that it can be reached without crossing any tracks. If, however, the branch road comes in from the opposite side of the main tracks, it is brought in like a third main track, and gives rise to a second intermediate platform [see Fig. 4]. This avoids having the branch track cross the main tracks, but requires that passengers shall cross the two main tracks in order to reach the second intermediate platform; and it is in some cases a question which of these is the lesser evil. If the branch road is carried above the other tracks outside the station, it may be brought in as in Fig. 3.

It is not generally found in Germany that the crossing of one track is a serious evil, except in the case of very large stations, and it has been permitted even in the case of many of the large new stations. It is a rule, however, that nobody shall be allowed to cross just before the arrival of a train on the track in question, but that after a train has arrived, people may be allowed to cross the track BEHIND IT, at a signal from the station agent. The intermediate platform is therefore not directly opposite the main platform, but is placed a little farther along the track in the direction in which its trains run, an arrangement which at the same time enables the station agent to have a little better oversight over the two trains which are stopping. [See Figs. 1, 2, and 3.]

It is not necessary in way stations, or in general even in the case of larger stations, to confine the crossing to particular points, but it is permitted along the entire length of the platform, so far as it is opposite the intermediate platform.

Crossing the tracks is therefore in general only limited in regard to time, and is effected by the supervision of one or more of the employees. Disobedience of his directions is punishable, and does not often occur, since the public recognize the danger.

Where the traffic is in any degree heavy, however, crossing of more than one track is found a great evil. In this case, the necessary degree of safety cannot be attained even by having the trains stop in

such a way as not to be directly opposite, by limiting the crossing to certain short periods of time, by regulating the order of arrival of the trains, or by watching the public. Moreover, and worst of all, especially where many trains are being made up and sent out almost at the same time, people are apt to become flurried and to lose that presence of mind which is the first condition of safety. The recognition of these dangers, at old stations with several intermediate platforms, has therefore within a few years, as the traffic has increased, led in many places to the construction of other means of passing from platform to platform, such as by means of passenger tunnels or overhead bridges with steps leading to them (not inclines, which become slippery). The existence of such conditions has also led to the above-mentioned extensive reconstruction of entire stations.

In case the voice of the porter should not be alone sufficient to keep the public from getting too near the tracks, it is quite general now, at stations with a heavy traffic, to have a porter with a loud hand bell walk up and down the edge of the platform just before the approach of each train. This is also done whenever there is any passing of cars or engines, in switching operations, on the main tracks; which, however, should be avoided, as far as possible, by a proper arrangement of the tracks. Moreover, the speed must be low in all such switching operations, as well as when trains enter stations where the traffic is large.

In many cases of this kind, if crossing the tracks is permitted at all, it is limited to certain particular places, which are then prepared for the purpose, and guarded all the more carefully. An actual fencing-off of the platforms from the tracks, however, only occurs in case of exceptionally large passenger traffic, with regard to which further mention will be made.

3. Arrangements of the Platforms at Junction and Crossing Stations.

Junction stations which are not terminal points for the branch lines, but at which trains are to pass almost equally on to both or all of the roads, and also crossing stations, are generally made in Germany in the "wedge" or in the "island" form.* Of late, they have also in several cases been arranged in the form of way or through stations, with the station building on one side and several intermediate platforms, all of which may be reached without crossing the tracks (as,

* T. V., § 58, 2.

FIG. 6

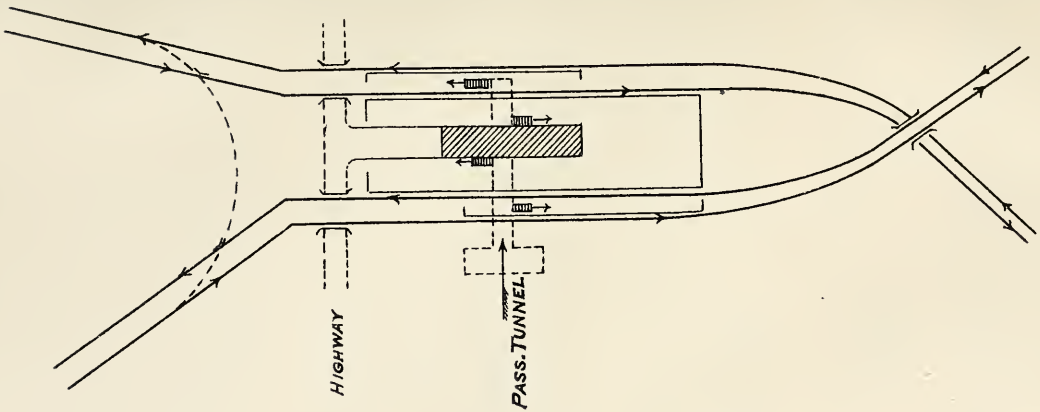
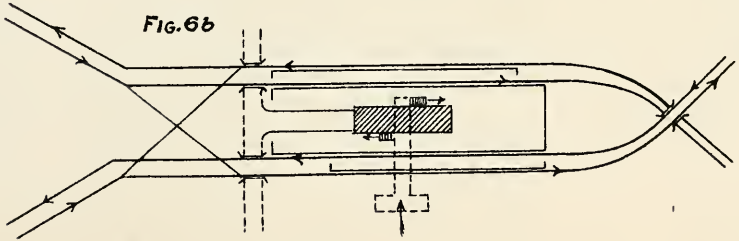


FIG. 6b



for example, at Hannover, Strasburg, Bremen, Münster, and Göttingen).*

In the wedge form, the principal platform and station building occupy the space between the diverging roads. It is very possible to make the two roads cross each other at separate grades, before arriving at the station, in which case we have a crossing station with the wedge form. The space at the angle between the two roads either retains the triangular form, or it is in other cases elongated into a nearly rectangular space by running the two lines of railroad parallel to each other for some distance. Each of the two roads, therefore, is on one side of the principal platform, just as in way stations, and is generally arranged with two main tracks and an intermediate platform. If the two corporations are distinct, one side belongs to each of them. If other branch roads enter at the same station, they are, as in way stations, either run in on platforms extended from the ends of the building, or brought in on additional intermediate platforms. With regard to the crossing of one or more tracks, in order to reach the intermediate platforms, the conditions are therefore precisely the same as in the case of the way stations already described.

The approach to the station from the town, however, takes place in another way, namely, between the two roads up to one end of the station building. If the town lies between the two roads, the approach may be direct; if it lies on one side, the approach may be arranged to cross over or under one of the roads, and thus avoid crossing at grade. [See Fig. 5.] Grade crossings in such cases are now only allowed where the local traffic is small, and where they exist they are gradually being done away with.

In order to shorten the distance from the town, if it lies at one side, it is not seldom that a tunnel for passengers is also carried under the tracks directly to the station building.

In the case of the "island" form [see Fig. 6], the principal platform and station building are entirely surrounded by tracks. A direct approach to the building by means of a passenger tunnel or bridge is here all the more necessary, unless a suitable approach can be obtained by carrying a roadway under the tracks, from which one end of the building may be reached, as already described in the case of the wedge form, and as has been done in the reconstruction of the station Halle.

Of late, large stations have frequently been provided with a

*See an article by Grüttesien in the "Centralblatt der Bauverwaltung," 1888, in which several of the questions here considered are very well treated.

separate building with ticket office and baggage-room, the main hall of which at the same time forms the entrance to the passenger tunnel, as, for example, at the stations Hildesheim, Düsseldorf, Erfurt, Cologne, and others. In Düsseldorf and Cologne, indeed, there are separate tunnels for entrance and exit, in order to avoid the meeting of passengers coming in and going out. The building between the two roads in this case contains only the waiting-rooms, rooms for the station service and telegraph, and the water-closets.

In the island form, as in the wedge form, there is generally on each side, in addition to the main platform, an intermediate or an outside platform, and sometimes several, as at Halle. Branch roads are brought in either on projecting platforms at one end of the station building, as in Düsseldorf and Cologne, or on intermediate platforms, as already described. In these cases, just as in the case of through stations, the crossing of one track is considered allowable (as at Hildesheim, Düsseldorf, and Erfurt), or it is entirely prevented by the aid of stairs, with overhead bridges or tunnels, as at Halle and Cologne. If it is considered desirable to avoid the ascent and descent which are required by the use of bridges and tunnels, the ticket office and waiting-rooms must be put at the same level with the tunnel, that is, below the tracks, as is the case at Halle, and also in the case of the stations at Hannover, Bremen, and Münster, at which the station buildings are entirely at one side.

Against the arrangement by which the waiting-rooms are placed lower than the platforms, the objection is often brought that people naturally desire to be as near as possible to the platforms when trains leave, and to be able to watch them through the windows. To this it may be rightly applied, from the technical point of view, that the traveller cannot possibly understand the movements of trains at a large station, and that it is much safer for him to wait in the waiting-rooms until his train is called, which is always done in ample season.

In the case of the station at Strasburg, in which the station building is also at one side of the tracks, it was attempted to diminish this difficulty by having the principal waiting-rooms at the level of the main or outer platform, and adding smaller waiting-rooms on each of the two intermediate platforms. The consequence of this is that the latter are too crowded. If all the waiting-rooms were large enough, this arrangement might be called quite perfect, but it would require very wide intermediate platforms, and thus necessitate a great increase in the cost of the entire station.

If, therefore, crossing of the tracks is to be entirely avoided, the question will be, which is the smaller evil for the travelling public,

to have to ascend and descend a flight of steps, or to lose a certain oversight, which is supposed to have a certain value, over the motion of the trains? In the latter case, the public would, however, have the choice of waiting on the platform or in the waiting-rooms.

For other points of interest with regard to the arrangement of station platforms and their approaches, in the case of large stations, reference may be made to the article of Grüttesien. Mention may be made, however, of the fact that in late years, and in the case of stations which have a very heavy traffic, as at Hannover, separate baggage platforms have been provided, and mixed trains * have been either entirely prohibited, or limited as much as possible, for the purposes of relieving the passenger platforms from obstruction by baggage trucks, and to obtain the greatest regularity in operation.

B. Arrangements in the Case of Stations where the Passenger Traffic is at Times very great.

Source of Difficulty of maintaining Order. — A peculiar position is occupied by those German stations in the neighborhood of very large cities, and particularly in the vicinity of Berlin, which are required to accommodate the large crowds of people, who, according to German custom, go out into the country on Sundays and holidays, and on other special occasions, particularly in summer, for rest and recreation.

In such cases the capacity of the road, rolling stock, and employees is tested to the utmost, and trains are obliged to follow each other at the shortest intervals consistent with safety; and it is therefore all the more necessary that the rules shall be strictly enforced, since any blocking of the traffic may be followed by unexpected consequences. It is, however, all the more difficult, since the employees already have their hands full, and are for the moment powerless against a crowd of thousands of people who lose their heads.

This difficulty is felt to the greatest extent by the Berlin-Potsdam-Magdeburg R. R., which at the same time is obliged to accommodate the express trains running between Berlin, Magdeburg, Aachen, Belgium, etc.

Within 93 miles (150 kil.) of Berlin, as far as Werder, a station beyond Potsdam, the two different lines of this road touch no fewer than twelve such places of recreation for the Berlin populace. In the summer almost every one of these is regularly crowded, on pleasant Sundays and holidays, by thousands of people, who, for the most

* For freight and passengers together.

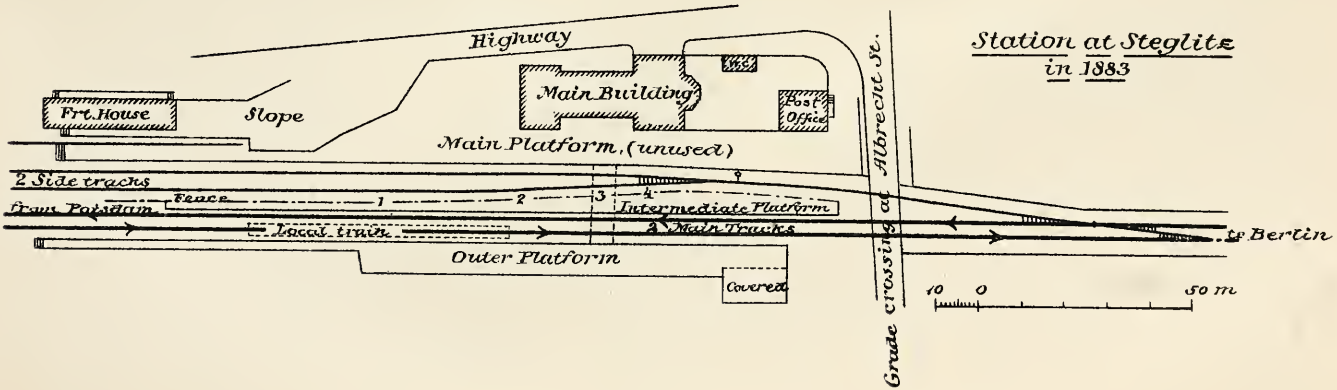
part, do not come out until the early afternoon, and all stream back to the city in the few late hours of the evening. At these times, therefore, there are tremendous crowds, and naturally the greatest trouble is experienced in the stations nearer Berlin, since the trains which come from the more distant places generally arrive already crowded, and are thus obliged to pass on without stopping. When finally a train stops and appears to have some room left, the people, tired of waiting so long, rapidly crowd upon the train and endeavor to gain an entrance if possible, sometimes by force. In such cases the cars (European system with ten seats in each third-class compartment) are often crowded with double the number they can accommodate, and the people cannot be controlled by any warning of the employees, and are almost blind against immediate danger. It is, therefore, under such circumstances, of the utmost importance to take such measures that it shall be almost impossible for any danger to arise. That is to say, not only to forbid, in the first place, the crossing of the tracks, but to make it absolutely impossible, or to arrange things so that people are not exposed to any temptation to cross.

Accident at Steglitz, Sept. 2, 1883.— A harrowing accident which took place a few years ago at Steglitz, a station near Berlin on the above-named road, afforded a most instructive lesson of this kind, not only for the management but also for the public. On account of the peculiar circumstances it may here be described in detail.

This station, notwithstanding several unimportant changes which had been made in it from time to time, was arranged in a very faulty manner for a station under the circumstances which have been described. The original principal platform at the station building had been already abandoned for passenger traffic. In front of it there were, as at present, two side tracks, then came a very narrow intermediate platform for the trains from Berlin to Potsdam, and finally, beyond the two main tracks, which were close together, there was an opposite or outside platform, for the trains from Potsdam to Berlin. In front of the intermediate platform, and running for its entire length, there was a low fence with four openings, which could be closed. The crossing to the farther outside platform was directly in front of the middle of the main station building, through the third opening in this fence, so that two side tracks and one main track had to be crossed in order to reach a train on the farther track. [See Fig. 7.]

A reconstruction of the station and the construction of a tunnel for passengers, together with an underneath crossing for a neighboring street, had already been projected, and, with other plans of the railroad corporation, had been submitted to the House of Deputies

Fig. 7.


Station at Steglitz
in 1883
Highway
Frt. House
Slope
Main Building
Post Office
Main Platform, (unused)
2 Side tracks
from Potsdam
Fence
1
2
3
4
Intermediate Platform
Local track
2 Main Tracks
to Berlin
Outer Platform
Covered
Grade crossing at Albrechtstr.
10 0 50 m

(Abgeordnetenhaus) in January, 1883, for the appropriation of the necessary sum.*

The petition, however, notwithstanding that it was strongly urged by the minister of public works, was rejected in April of the same year after a discussion of nearly two hours, partly on the ground that it was too expensive, but principally on account of the objection to the use of tunnels and steps, which view was maintained by one of the members of the house, who, up to the time that the road had been transferred to the state, had been a member of its corporation, and upon whose personal and accurate knowledge of the conditions the house seemed disposed to place great weight.

On Sept. 2 of the same year, a day celebrated in Germany as a general holiday, the error of those views and the necessity of a tunnel were proved in the most harrowing manner. At about ten o'clock in the evening one of the many local trains for Berlin ran into the station and stopped. As a through express train from Berlin to Magdeburg, Aachen, etc., was immediately expected, the station agent and two employees tried in vain to prevent the crowd who were waiting upon the main platform from opening the gates and getting over the fence. A few people got over the fence of the intermediate platform near the first opening, and immediately the crowd followed in wild disorder, with the idea of getting on to the wrong side of the train which was standing on the farther track. At this moment the express train from Berlin, almost at full speed, ran into the crowd, and within the space of a few minutes thirty-seven dead bodies lay on the ground. The station agent, with his assistants, had tried in vain by swinging a hand lantern to bring the express train to a stop, but the crowd had prevented this signal from being seen, and, in fact, one of the employees had been pushed over.†

It may easily be concluded that at such a moment the simple presence of a tunnel or of an overhead bridge would not have been sufficient to keep back the public from crowding over to the fence; but it does seem not improbable that a simple wooden stairway, like that at Friedenau, would have been sufficient to prevent the accumulation of the crowd on the unused main platform, and therefore to remove the temptation to jump over the fence.

Remedies.

The surest remedy is evidently the erection of fences of such character and such height that people could not for a moment think of

* The road had been transferred by the act of 1880 to the possession of the Prussian state.

† Compare the detailed testimony of a competent eye-witness in the "Centralblatt der Bauverwaltung," 1883, p. 21.

quickly climbing over or creeping under them, but would realize at once that an insurmountable obstacle was before them.

Since that time close and high fences, solidly built, have been erected at all places in the neighborhood of Berlin exposed to similar danger, particularly between the main tracks, so that from any platform only one track can by any possibility be reached on each side. In many cases, by the erection of overhead bridges or the building of tunnels, the public has been entirely prohibited from crossing the tracks; while, and in many less dangerous places, a sliding or other gate has been provided in the fence for use at certain times.

Upon another application, the reconstruction of the station at Steglitz was at once authorized without dissent by the House of Deputies, with the appropriation of a larger sum than was at first asked, and in the following year it was carried out.

Figs. 8 and 9, together with the sketch showing plan of the station (Fig. 10), give an idea of the present arrangement. The two side tracks remain in front of the unused main platform (platform A). Then comes, however, a solid iron fence of wire netting, and with a sliding gate for employees and baggage trucks. Then comes a wide intermediate platform (platform B), the only entrance and exit to and from which is the passenger tunnel; then the track *from* Berlin, which can only be reached from the intermediate platform; then again, another strong iron fence, then the track *toward* Berlin; and finally, the opposite platform (platform C), partly roofed over, and again with only one means of approach, namely, by the tunnel.

Fig. 8 is a view taken from the unused main platform, Fig. 9 is one from the opposite platform, close to the tunnel entrance, both looking in the direction towards Berlin. The latter shows also the iron bridge, carrying the railroad over the neighboring highway. The passenger tunnel, on account of its small length, is throughout light and clean, and its use is made the less unpleasant by the fact that the ticket office and the approach from the town are at the same level.

The accident which has been described, one of the most terrible which ever took place in Germany, caused tremendous excitement, and in many respects taught a useful lesson. Not only did it silence the opposition to tunnels and stairways, and to increased expenditure for the protection of the public, but it gave the latter, and particularly the people of Berlin, who were of course the most concerned, a healthy warning. Similar infringements of the rules have since that time not taken place even on a small scale, and are indeed now scarcely possible.

Figs. 11 and 12 show the arrangement of the flag station Friedenau (between Steglitz and Berlin) on the same road. It has two



8. Station at Steglitz.

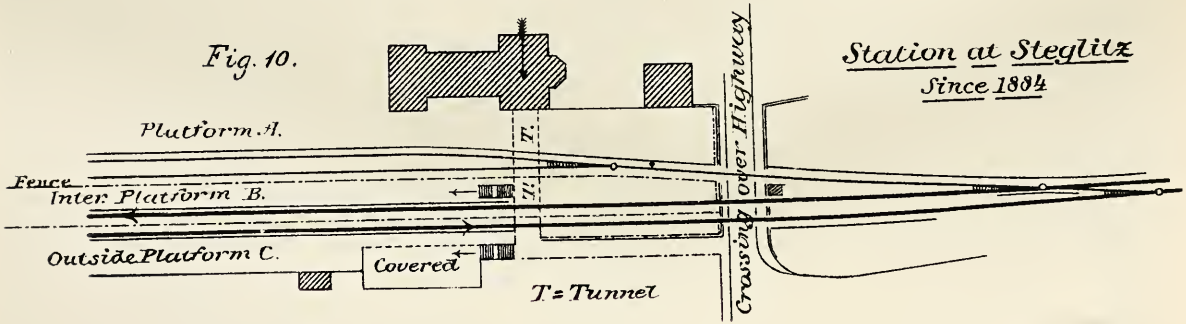
(Berlin-Potsdam) 1888.



9. Station at Steglitz, 1888.

Fig. 10.

Station at Steglitz
Since 1884



outside, or opposite, platforms, and between the two tracks a strong wooden fence with a rolling iron gate, as well as a second similar fence in front of the first outside platform. The small building with ticket office and waiting-room may be seen to the left, behind the trees. The bridge serves as a means of exit and approach for the farther outside platform (for trains to Berlin). The first fence is in this case for the purpose of allowing the punching of tickets at the entrance to the platform, since on account of the short distance to Berlin there is not always time to do it on the train.

Fig. 13 shows the corresponding arrangement at the flag station Shöneberg, a place which now really forms a part of Berlin, and has also abundant horse-car connections with it. A fence between the two main tracks is here not necessary, since the approach to both the outside platforms is only possible from the bridge, and therefore there can be no occasion for a sudden crowding over the tracks. The picture is taken looking from Berlin. Quite on the left may be imagined the small station building; then follows a branch track of the circuit road leading to the Potsdam station in Berlin (terminal station). On the left, the approach leading up out of the cut leads through the station building (which cannot be seen on the picture) or close by the side of it through a gate in the fence (on the left near the first lantern), at which place the tickets are examined.

Berlin City and Circuit Road.*

On the Berlin city and circuit road — except in the case of the two separate tracks for through travel to distant places — the tickets are punched when the passenger enters the platform, and collected when he leaves it, so that no tickets are collected on the train. Also, contrary to the general custom on German railroads, people are allowed to get into the cars without any supervision. At the stations within the city, stairs always lead from below the viaduct directly to the platforms, which are always so-called "island" platforms, serving for the *two* tracks between which they are placed. The tickets are punched at the top of the stairs, and no further fences are necessary in this case. At the stations of the circuit road, on the contrary, an outer fence is generally added, in passing which the tickets are collected. The trains are reached from one outside and one intermediate platform, or from two outside platforms, in which case each has a separate approach by a flight of stairs from the sides of the embankment. These two approaches are connected by a narrow

*See the excellent official publication in the "Zeitschrift fur Bauwesen," 1884–85; also published separately, Berlin, 1885. Ernst & Korn.

passageway or tunnel. In these cases there are also fences between the main tracks, which, however, are of little importance, since these stations are not subject to very sudden crowds, and since the trains cannot be approached without examination of the tickets, so that nobody can get on to the wrong platform.

On the other hand, certain other sections of the city and circuit road are similar to the stations of the Potsdam road, already described; as, for instance, the station of Grünewald, a place of recreation, which is not only a way station for the suburban trains from the Berlin city road to Wannsee and Potsdam (by use of the line from Berlin to Frankfort-on-the-Main as far as Wannsee), but is also the terminal station for several branch lines of the city and circuit road. In this case there are, in addition to the outer fences which separate the waiting-rooms from all the platforms, other fences between the tracks, and any crossing of the tracks is impossible. The connection between the platforms is by a passenger tunnel opening outside the fences.

The passenger station West End forms the real terminal point for the trains running back and forth on the city road, but is also a way station for the trains which cross over to the circuit road every hour or half-hour (which formerly took place in Charlottenburg). It is also a way station for the double-track road from the Berlin city road to Lehrte, Hannover, and Cologne, on which suburban trains run as far as Spandau; and finally it is also the terminal station for special work trains of the city and circuit road. It is therefore arranged [see Fig. 14], in the first place, with a platform between the two terminal tracks of the city road (platform A), partly roofed over and with a ticket gate at the head. It further has an "island" platform between the two tracks of the circuit road (platform B), then a second "island" platform between the two tracks of the road from Berlin to Lehrte (platform C), and finally an intermediate platform, used only on one side, for workmen (platform D). The two "island" platforms can only be reached through the station building, by means of an iron foot-bridge from its upper story, which is on the same level with the Spandau road, as may clearly be seen in Figs. 15 and 16. The punching and collection of the tickets take place at the entrance to the bridge. The platform for workmen has a separate approach by a flight of stairs directly from the Spandau road [see Figs. 15 and 16]. Fig. 15 is taken from the west side of all passenger tracks, looking in a northeasterly direction; Fig. 16 from the platform of the Berlin-Lehrte road, looking toward the north; Fig. 17 from the same place, but looking more towards the south, so that the platform of the circuit road, with the flight of stairs which forms its



11. FLAG STATION, FRIEDENAU.

(Berlin-Potsdam) 1888.



12. Flag Station, Friedenau.



13. Flag Station, Schöneberg.

approach, can easily be seen. Finally, Fig. 18 gives a view from platform A looking in a northerly direction. On the extreme right lies the first track of the city road, on the end of which the smoke-stack of a locomotive can just be seen.

As may be seen from the illustrations, fences are used here throughout, in such a way that from each edge of a platform it is only possible to reach the particular track belonging to it. Further, from the ends of the two "island" platforms, short fences, gradually narrowing the passage between them, run to the stairway approaches, as may be clearly seen in Figs. 16 and 17, evidently because it has been found by experience that it is desirable to lead the public gradually in this way.

According to the objects which they are to attain, we may therefore distinguish three different kinds of fences: —

1. Those which are necessary in order to examine the tickets and prevent people from getting on to the platforms or trains without them.

2. Those which render it of no use to get upon or cross the tracks (which are open at the platform), and which therefore simply serve to remove the temptation to cross.

3. Those which serve only to guide the movements of the public, and to prevent people from going in the wrong direction.

Finally, it may be remarked, that in the case of the stations on the Berlin city road, the best arrangement has proved to be the one by which the approach to the platforms takes place in the direction of the tracks, and in the most direct manner, by means of a flight of stairs leading up from a street crossing beneath the tracks, by the ticket office and baggage-room. In this case, the movement of passengers is always in the same direction. The same arrangement can also be readily applied in the case of stations which have several intermediate platforms (such as junction and crossing stations), particularly when no weight is to be laid upon the architectural effect.

C. Statistics of Accidents.

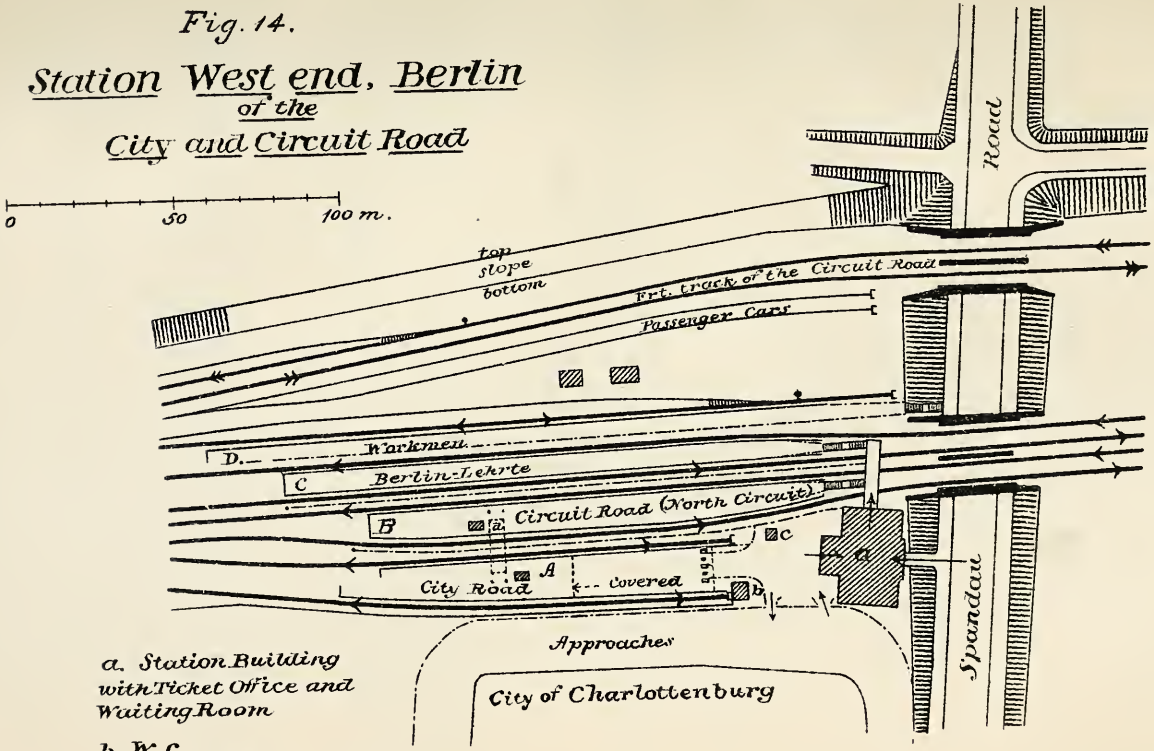
The "Statistics of German Railroads" distinguish the following kinds of accidents: —

1. Derailments.
2. Collisions.
3. Other accidents.

The last head has four subdivisions, but is not separated in regard to the consequences. The injured persons are further distinguished as —

Fig. 14.

Station West end, Berlin of the City and Circuit Road



a. Station Building with Ticket Office and Waiting Room

b. W. C.

c. Ticket Office with Clock used in great crowds

d. Bridge



15. STATION, WESTEND.

(Berlin city and circuit road) 1888.



16. STATION, WESTEND.



17. Station, Westend.



18. Station, Westend.

wide as to afford ample room, and indeed many employees must of course make use of it in this way.*

This may at any rate be best prevented, where the necessity is felt, by laying out and keeping in good order a public way along the road outside of the fence. This is frequently done in Germany, often in connection with flower beds or grass plats.

To cross over or get on to the tracks at will at a station would be looked upon, however, as a most rash and punishable undertaking, and could scarcely succeed on account of the strict supervision exercised. There would also be in many cases little temptation to do it, on account of the side tracks being often filled up with freight cars, even if there is no shifting going on.

A short statistical summary is appended. It contains the number of deaths and injuries on all the German normal-gauge roads in the operating year 1886–87, with the exception of the shop service. It is divided as to travellers, trespassers, employees (see above, numbers 2, 3, 4, collected together under *c*), and suicides. The figures given are taken from the official statistics, which are very carefully compiled, and the total number of deaths and injuries computed. The ratios (lines 6 to 9) have been calculated from the stated traffic figures, in the case of *b* and *c*, since they are not contained in this form in the statistics.

If we subtract from the 176 deaths and 131 injuries in the case of trespassers (see p. 154, line 3) the above-mentioned 6 deaths and 31 injuries (p. 159) † at highway grade crossings, there remain still 170 deaths and 100 injuries, which have occurred in the case of trespassers at all the stations, and on the track outside of stations (with the exception of the workshops); and almost all of these were due to the carelessness of the persons injured. These cases probably refer principally to persons who accompany departing friends or await arriving ones at the stations; also to those persons mentioned above, who are engaged at freight stations; and finally also to those people who, as already described, in certain coal-mining districts of Germany, wilfully break the rules of the road.

These 170 deaths and 100 injuries correspond to a ratio of:

One death to 0.43 million train miles, or to 0.0106 million car-axle miles.

One injury to 0.25 million train miles, or to 0.0062 million car-axle miles.

* The roadway, measured about 20 inches below the bottom of the rail, must in the case of principal roads be at least 9 feet from the outside to the middle of the nearest track along stations, but is generally more. [See T. V., § 8.] The greatest width of cars is only 5¼ feet on each side of the middle of the track.

† If the cases which have occurred on the few narrow-gauge roads were included, the figures would not be appreciably changed.

SHORT STATISTICS OF ALL THE ACCIDENTS OCCURRING ON THE 23,666 MILES OF NORMAL-GAUGE GERMAN RAILROADS IN THE OPERATING YEAR 1886-87 (APRIL 1) (WITH EXCEPTION OF THE SHOP SERVICE). BASED ON THE "STATISTICS OF GERMAN RAILROADS," 1886-87.

No.	Kind of Accident.	Number.			KILLED OR INJURED.													
					a. TRAVELLERS.			*b.* TRESPASSERS.*			*a* AND *b* TOGETHER.			*c.* RAILROAD OFFICIALS & WORKMEN.†			*d.* SUICIDES.	
		On the Road.	At Stations.	Total.	Killed.	Injured.	Total.	Killed.	Injured.	Total.	Killed.	Injured.	Total.	Killed.	Injured.	Total.	Killed.	Injured.
1	Derailments . .	106	342	448	–	13	13	1	–	1	1	13	14	6	70	76	–	–
2	Collisions . . .	26	233	259	13	77	90	1	6	7	14	83	97	2	128	130	–	–
3	Other causes . .	798	2,136	2,934	30	51	81	176	131	307	206	182	388	291	2,078	2,369	–	–
4	Total	930	2,711	3,641	43	141	184	178	137	315	221	278	499	299	2,276	2,575	150	14
5	Of these, not due to their own fault .				13	96	109	5	13	18	18	109	127	–	–	–	–	–
6	No. for every 1,000,000 travellers . .				0.15	0.48	0.63	0.61	0.47	1.07	–	–	–	–	–	–	–	–
7	" " " " person miles .				0.003	0.011	0.014	–	–	–	–	–	–	–	–	–	–	–
8	" " " " train miles . .				–	–	–	0.45	0.34	0.70	0.55	0.70	1.22	0.75	5.70	6.45	–	–
9	" " " " car-axle miles .				–	–	–	0.112	0.009	0.019	0.014	0.017	0.031	0.019	0.014	0.16	–	–

TRAFFIC.

Number of persons carried	295.759	millions.
" " passenger miles	5,202.237	"
" " train miles	154.255	"
" " car-axle miles (all kinds)	6,311.4	"

*The trespassers include also railroad officials and workmen not in service at the time.

†Among these are also included post-office, telegraph, revenue, and police officials [Table 31, columns 60 and 61 of the "Statistics of German Railroads"]; also any section hands or workmen engaged on works in process of construction, or in loading or unloading, who may be injured [Table 31, columns 104, 105]. The ratios under Nos. 8 and 9 are therefore different from those given in the "Statistics of German Railroads," which do not include such persons.

STATISTICS OF ACCIDENTS AT HIGHWAY GRADE CROSSINGS, FOR ALL THE GERMAN RAILROADS.

For 1885 and 1886 only in summary.
For 1887 and eight months of 1888, in detail.

Compiled from official sources by A. GOERING.

REMARKS.

Primary Roads are fenced in and continually guarded for their entire length, and on them the grade crossings of highways are protected by gates. The gauge is 4′ 8½″ [1.435 m.].

Secondary Roads are those in which the maximum speed of trains is not over twenty-five miles per hour, and on which the fencing-in, continual supervision, and grade-crossing gates are either entirely or partially omitted. The gauge may be 4′ 8½″, 3′ 3⅜″, or 2′ 5½″ [1.435, 1, or 0.75 metres.]

See page 157 for mileage, number of grade crossings, and amount of traffic.

TABLE I.

Primary and Secondary Roads.

Year.	Accidents to vehicles at highway grade crossings.							
	On Primary Roads, 18,990 Miles.			On roads, or portions of roads, which are operated according to the "Regulations for Roads of Secondary Importance," 4,379 Miles.				
	Number of Cases.	The fault of the management of the road.	The fault of the driver.	Number of Cases.	The fault of the management of the road.	The fault of the driver.	The crossing was guarded.	The crossing was not guarded.
1885.	34	17	17	19	2	17	3	16
1886.	42	17	25	30	2	28	6	24

Total mileage * in the operating year 1885-86 (April 1, 1885-April 1, 1886) = 23,368 miles (in round numbers).

Total traffic in the operating year 1885-6 (April 1, 1885-April 1, 1886) = 160,289,400 effective "locomotive miles" (outside of stations).

* Primary roads . . .	18,990 miles	Total normal-gauge roads . .	23,132 miles.
Normal-gauge secondary roads,	4,142 "	Total secondary roads . .	4,378 "
Narrow " " "	236 "		
Total . . .	23,368		

TABLE 2.

PRIMARY ROADS.

Total mileage, 19,126 miles. Number of grade crossings, 36,762; in addition, 3,586 private grade crossings, kept locked.

Year.	Number of Cases.	The blame for the accident lies with the management.			The blame for the accident lies with the driver (or pedestrian).			
		Gates were not shut.	Signals were not observed.	Other causes.	Passing by the gates.	Opening gates.	Vehicle without driver.	Carelessness.
1887.	49	27	–	2	1	5	4	10
First eight months of 1888.	32	14	–	–	4	7	2	5

SECONDARY ROADS.

Roads or portions of Roads which are operated according to the Rules for Roads of secondary importance: total mileage, 4,888 miles; No. of highway grade crossings—guarded, 1,897; unguarded, 14,815.

Number of cases.	The crossing is guarded.	The crossing is not guarded.	The fault of the management.			The fault of the driver.				
			Gates were not shut.	Signals were not observed.	Other causes	Passing by the gates.	Opening gates.	Vehicle without driver.	Carelessness.	Unmanageable horses.
31	2	29	1	1	–	–	–	3	23	3
26	4	22	2	1	1	1	–	–	18	3

1. Mileage at the end of the operating year 1886-7 (April 1, 1887):—

Primary roads	19,125	miles.
Normal-gauge secondary	4,541	"
Narrow-gauge "	347	"
Total	24,013	"
Total normal-gauge, primary and secondary,	23,666	"
Total secondary, all gauges	4,888	"

2. Number of grade crossings on primary roads (public), 36,762
 In addition, private crossings, kept locked . . . 3,586
 Total . . . 40,348*
 Number of public highway grade crossings on secondary roads, guarded . . . 1,897
 Not guarded . . . 14,815
 Total . . . 16,712*
 36,762
 Public highway grade crossings, on all roads . . 53,474

3. Traffic in the operating year from April 1, 1886, to April 1, 1887:—
 Average number of trains on the *entire* mileage: on normal-gauge roads, 6,576 trains, or 18 trains a day; on narrow-gauge roads, 2,680 trains, or 7.35 trains a day.
 On *all* normal-gauge roads (19,095 + 4.541 = 23,636 miles), 162.91 million effective locomotive miles (outside of stations).
 On the 347 miles of narrow-gauge roads, 0.93 millions effective locomotive miles (outside of stations).
 Total, 163.84. Of these, about 155.18 million train-miles.

* In addition to these, there are, on all normal-gauge roads, 1,501 footway crossings with turnstiles. While some of these are on secondary roads, they are generally on the primary roads. These crossings, together with the private crossings, have been omitted in all these calculations, for the reason that it cannot be determined how many belong to primary and how many to secondary roads. In reality, therefore, the frequency of accidents should be a little smaller than given above.

TABLE 2.— *Continued.*

ON PRIMARY ROADS (TOTAL MILEAGE, ABOUT 19,095 MILES).

RESULTS.

YEAR.	Derailment of the train.	Injuries to Cars.		Injuries to Private Vehicles.			Injuries of Persons.						Injuries to Animals.	
							Employees of the R. R.		Travellers in the Train.		Trespassers.			
		Serious.	Not serious.	Completely destroyed.	Serious.	Not serious.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1887	–	–	33	23	12	8	–	–	–	–	5	17	23	7
8 mos. of 1888.	4	–	18	12	6	6	–	1	–	–	5	8	13	3

N. B.— Among the persons killed are also included those who died within twenty-four hours.

ON ROADS OR PORTIONS OF ROADS WHICH ARE OPERATED ACCORDING TO THE RULES FOR THE OPERATION OF ROADS OF SECONDARY IMPORTANCE (MILEAGE ABOUT 4,888 MILES).

RESULTS.

Derailment of the train.	Injuries to Cars.		Injuries to Private Vehicles.			Injuries to Persons.						Injuries to Animals.	
						Officials of the Road.		Travellers in the Train.		Trespassers.			
	Serious.	Not serious.	Completely destroyed.	Serious	Not serious.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
*2	4	15	11	8	7	–	–	–	–	1	14	11	2
2	–	11	11	3	4	–	–	–	–	1	7	12	4

* In both cases the train was being *pushed*.

SUMMARY FOR 1887. (From Table 2.)

In the year 1887, therefore: —

On 19,125 miles of primary roads, with 36,762 public highway grade crossings, all guarded by gates, there occurred 49 accidents, with 5 deaths and 17 injuries.

1. One accident to 391 miles of road, or to 750 grade crossings.
2. One death to 3,825 miles of road, or to 7,350 grade crossings.
3. One injury to 1,126 miles of road, or to 2,160 grade crossings.

On 4,888 miles of secondary roads, with 1,897 guarded and 14,815 unguarded highway grade crossings, there occurred 31 accidents, with 1 death and 14 injuries.

1. One accident to 158 miles of road, or to 540 grade crossings.
2. *One death to 4,888 miles of road, or to 16,712 grade crossings.
3. One injury to 349 miles of road, or to 1,194 grade crossings.
4. With regard to the amount of traffic, the statistical material at hand is not sufficient to enable us to separate the primary from the secondary roads, since the amount of traffic is stated for all the normal-gauge roads together. If we calculate therefore the amount of traffic for all roads, both normal and narrow gauge, we obtain the following for 1886-87: —

Total mileage	24,013 miles.	
Total train miles	155.181 million train miles.	
Number of public highway grade crossings,	53,474	
Number of accidents at same		49 + 31 = 80
Number of deaths		5 + 1 = 6
Number of injuries		17 + 14 = 31

Taking all the roads together, there are therefore $\frac{155,181,000}{24,013} = 6,462$ trains, based upon the total mileage; $6,462 \times 53,474 = 344.594$ million train grade crossings.

There are therefore on all the roads together: —

4. One accident to 1.94 million train miles or to 4.31 million train grade crossings.
5. One death to 25.86 million train miles or to 57.43 million train grade crossings.
6. One injury to 5.01 million train miles or to 11.11 million train grade crossings.

Killed and injured: 1 to 4.19 million train miles or to 9.31 million train grade crossings.

* The deaths include those trespassers who were injured but who died within 24 hours after the accident. The injuries also refer only to trespassers, that is, to outsiders or persons other than passengers or employees of the road in service at the time.

With regard to killed and injured animals, see Table 2.

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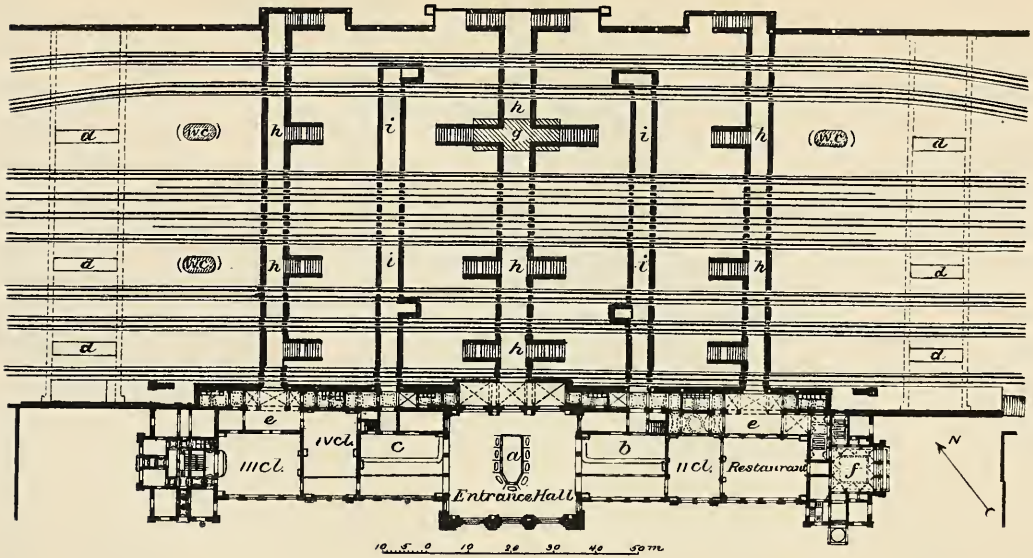
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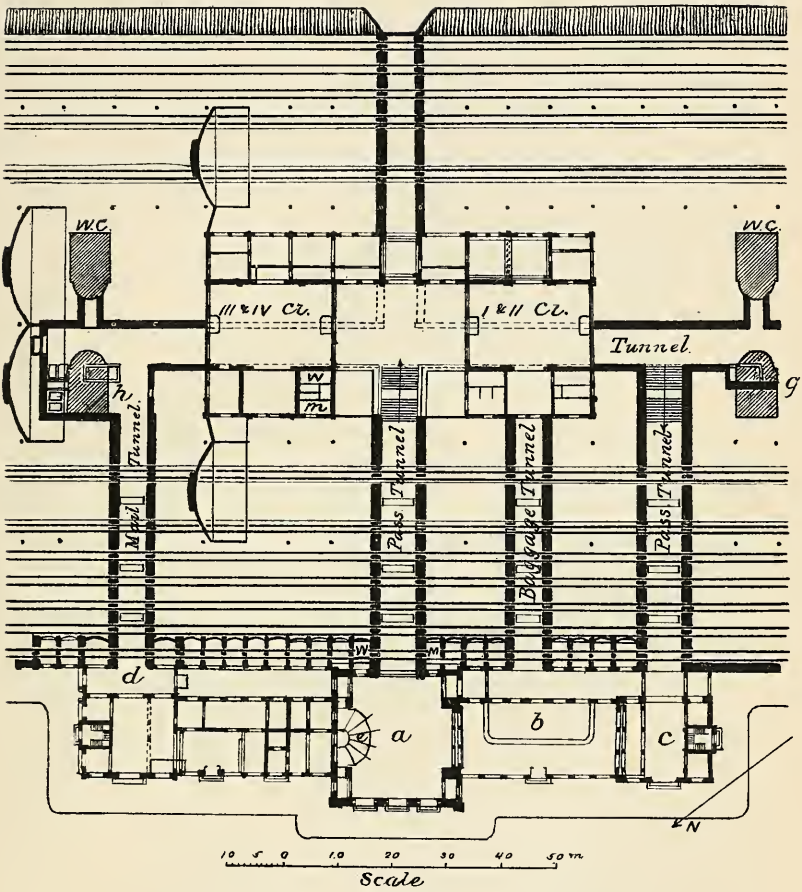
No. 1



Station at Hannover

a Ticket Office
b Outward Baggage
c Inward "
d Skylight
e Light shaft
f Royal Waiting Room
g Restaurant
h Passenger Tunnels
i Baggage Tunnels

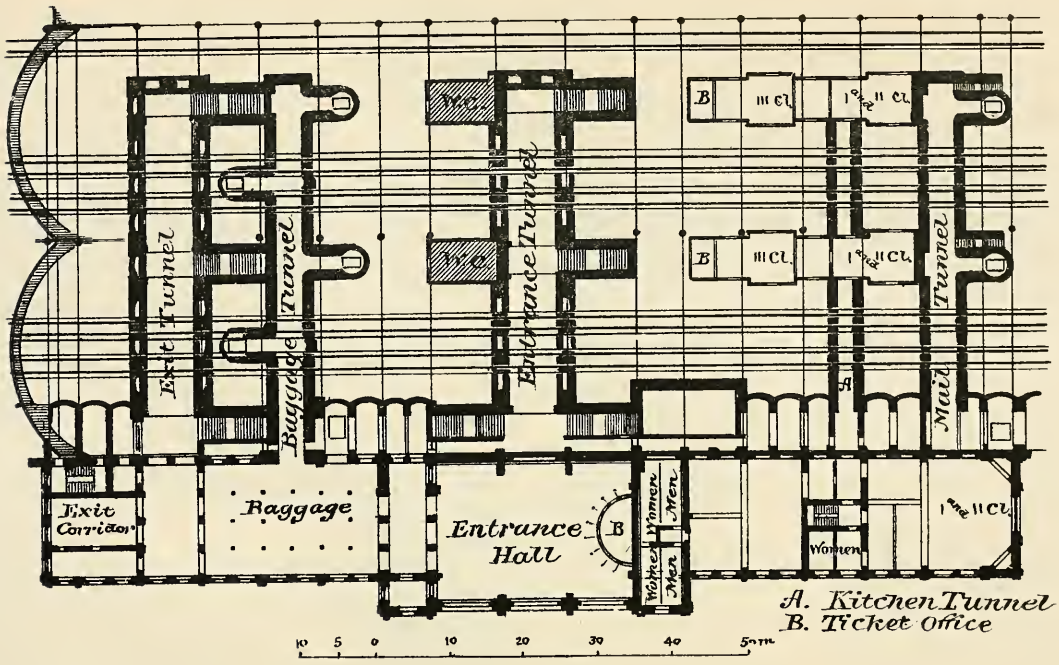
No. 2



Station at Düsseldorf

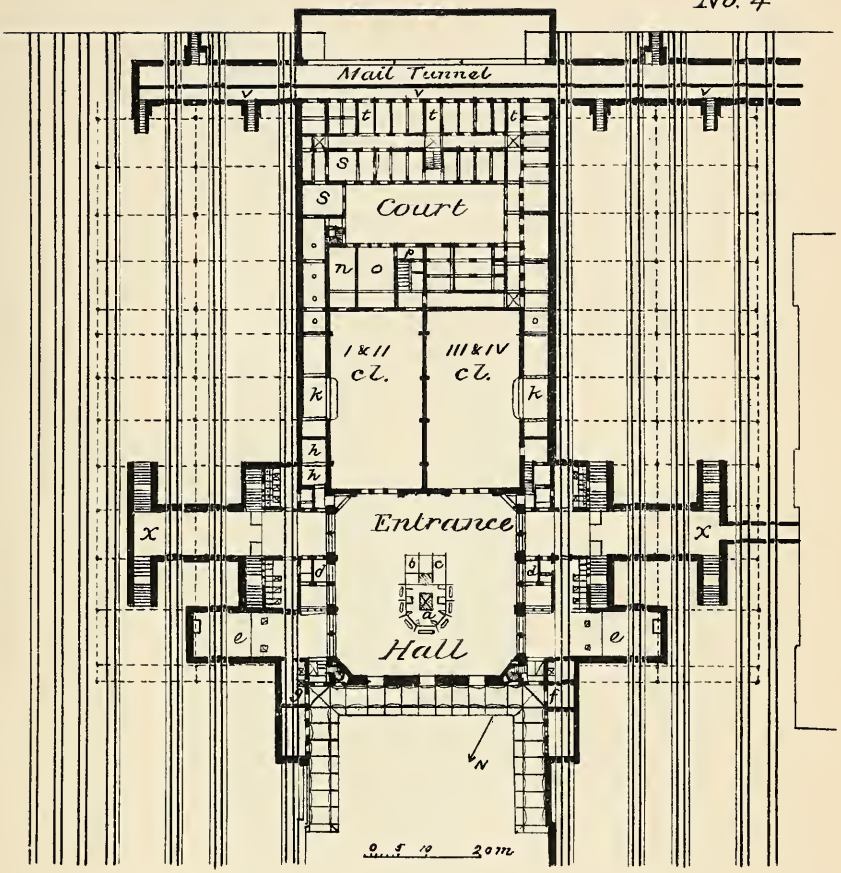
a Entrance Hall
b Baggage Room
c Exit Hall
d Mails
e Ticket Office
g Trackmen
h Train Hands
w Women. m Men

No. 3



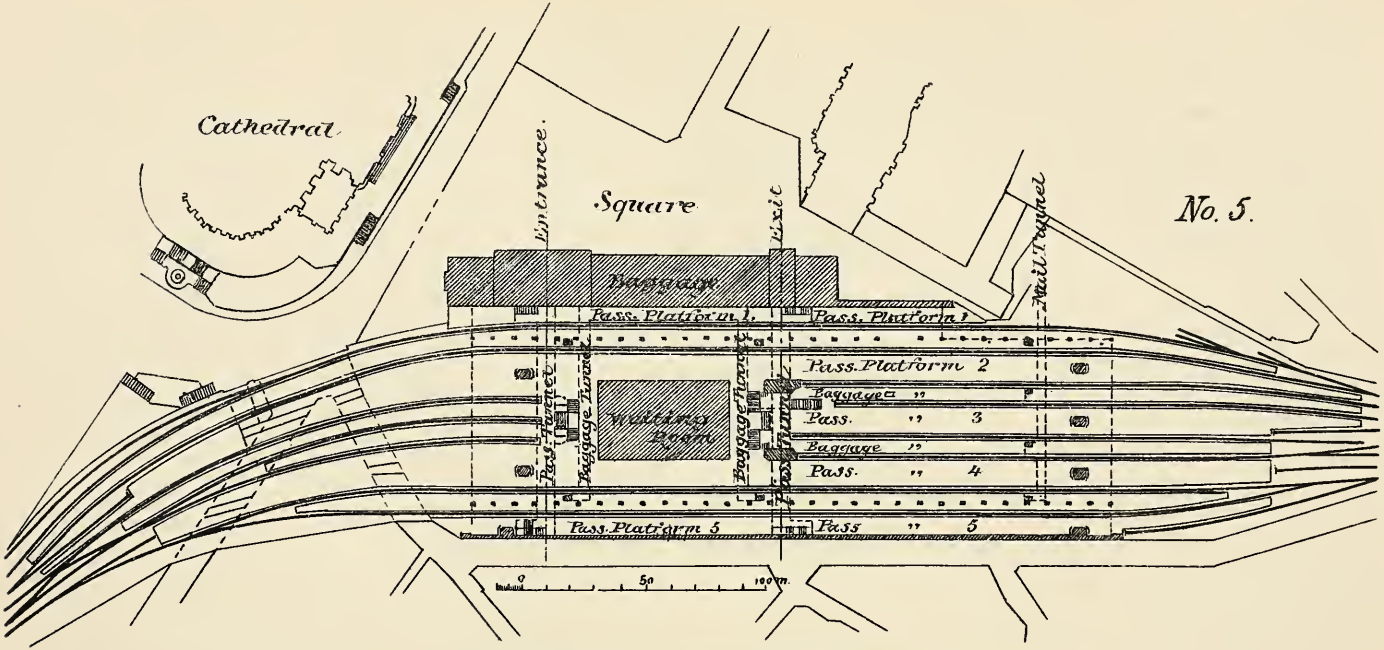
Station at Strassburg

No. 4



Station at Halle

a Ticket Office
b Telegraph
c Office
d Baggage Window
e " Rooms
f Police
g Porters
h Parcel Room
k Lunch Counter
n Wash Room
o Women
p Toilet
s Kitchen
t Passage Way
v Kitchen Tunnel
x Passenger "



Station at Cologne

[B.]

PREVENTION OF RAILWAY ACCIDENTS TO THE PUBLIC IN GREAT BRITAIN AND IRELAND.

POLICY OF PARLIAMENT CONCERNING RAILWAYS.

In dealing with questions of the safety of the travelling public, Parliament has proceeded upon the principle of not attempting to direct the active operations of railway companies, or to give to the government, either directly or indirectly, any control over the safe or efficient working of the railways.

Railway companies are free to construct and work their lines in any manner they choose, provided only that the construction is such, at the opening, as, in the opinion of an inspecting officer of the board of trade, will enable the then anticipated traffic to be worked without danger to the public.

When the line has been opened for traffic, government only possesses a power of making regulations at junctions between lines of two companies, and when the lines interfere with landowners' interests, as, for instance, where the grade of highway crossings is changed. But the control over the manner of working the line is left by Parliament entirely in the hands of the railway company.

The company, in undertaking the duty of carriers, becomes liable, under the common law, to compensate persons injured, and, under a special act of Parliament, to compensate near relatives of persons killed by its negligence or the negligence of its servants. If an accident occurs attended with fatal consequences, the directors, officers or employees of the company are liable to criminal prosecution and imprisonment, in the event of culpable mismanagement being proved.

Legislation for the Prevention of Accidents.

Parliament has from time to time appointed committees to inquire into the causes of accidents on railways, and the possibility of removing such causes by legislation.

A select committee, appointed by the House of Commons in 1852 to consider the principles which ought to guide the House in railway legislation, recommended, in regard to the prevention of accidents: —

1. That more effectual provision should be made for the direct individual responsibility of those who conduct the traffic, they being given such authority as will enable them to conduct it with efficiency and safety.

2. That greater punctuality in the running of trains should be required.

3. That some better means of communication, between the conductor and others in charge of the train, with the engineer, should be adopted on all trains.

This committee first formulated the principle which has since governed Parliament in dealing with the prevention of railway accidents; namely, "that, in any system requiring strict and efficient discipline, the responsibility for the conduct of servants must rest upon those who appoint and pay them; and, as this duty cannot be transferred from the principal officers or directors of the company to the executive government, it is essential that nothing be done to relieve, from the legal responsibility which attaches to them, those in whom practically the power of insuring efficiency will rest."

But the marked diminution in the number of accidents which subsequently occurred, induced Parliament to postpone any legislation at that time.

In December, 1857, another select committee was appointed by the House, to inquire into the possibility of removing causes of accidents by further legislation.

The committee reported that accidents to trains are due to the inattention of employees to regulations, defective material, — either in the road-bed, signals, or rolling stock, — and excessive speed for the purpose of making up lost time; and recommended: —

1. Strict personal supervision by the officers over the men employed and the material used on the railways.

2. Strict punctuality, under penalty, in the departure and arrival of trains.

3. The establishment of a means of communication between conductors and engineers of trains.

4. The despatch of trains by the telegraphic block system.

5. That the Government Board of Trade inspectors have increased power to investigate accidents, but that the adoption of all means for the prevention of accidents "had better be left to the management of the railway companies themselves."

No action was taken by Parliament on the recommendations of this committee, however, as it was feared that legislation of a compulsory nature would tend to relieve the managers of railways from responsibility.

In 1865 a Royal Commission, comprising members of both Houses,

was appointed, and given a wider scope for inquiry than either of the preceding committees.

This commission spent two years in making a full inquiry, and considered, among other things, the wisdom of endeavoring to enhance the safety of travelling by direct government interference with the practical working of railways. In their report the commissioners gave expression to the same judgment in the matter as that at which the committee of 1852 had arrived, as follows: "Parliament has relied for the safe working of railways upon the efficiency of Lord Campbell's Act, which gives persons injured and near relatives of persons killed a right to compensation. We consider that this course has been more conducive to the protection of the public than if the Board of Trade had been empowered to interfere in the detailed arrangements for working the traffic."

After stating that only twenty-three travellers in Great Britain, in 1865, out of 252,000,000, met death by causes beyond their control, the commissioners add: "We believe that no other mode of locomotion ever used by man can show such a satisfactory result, and we are therefore not prepared to suggest any alteration of the present law in this respect."

The commissioners, however, made the following recommendations; namely, that railway companies shall be absolutely responsible for all injuries arising in the conveyance of passengers, except those due to the passengers' own negligence; that the government inspecting officers shall have added power to send for persons and papers; that the reports of these inspecting officers shall be made public; that minor cases of attempts to injure trains from anything thrown by persons standing on bridges or embankments shall be deemed a misdemeanor, and disposed of summarily; and that the law as to trespassers be much more stringent.

The commission considered the question of punctuality of trains, but declined to recommend any additional legislation for insuring it.

It was expected that the recommendation of the commission would lead to the passage of stringent laws for the prevention of accidents; but the fear of relieving railway managers from responsibility tied the hands of Parliament, and no fresh legislation was attempted.

Three years after the Royal Commission made its report, the subject was again considered by Parliament. In 1870 a select committee of the House of Commons was appointed, to inquire into the question of compensation for railway accidents, and also to inquire what precautions ought to be adopted by railway companies, with a view to preventing accidents. Upon the second head of the reference the committee made no proposals, though it recommended to the

careful consideration of railway boards the evidence it had received in favor of the block and interlocking systems, and of continuous brakes.

With the exception of the seven concluding lines, which contain that recommendation, the entire report is devoted to the question of compensation for accidents.

The committee was of opinion that trial by jury is not a satisfactory method of dealing with claims against railway companies for accidental injuries, and recommended the creation of a court for the trial of these cases without a jury, which should possess adequate legal experience, and be assisted by engineering and medical advice.

The legislation which followed these various proposals, provided, by the Act of 1868, that every passenger-train which travels more than twenty miles without stopping must be furnished with efficient means of communication between the passengers and the employees of the company, and gave effect to one of the minor recommendations by making trespassers upon railways subject to a penalty.

It was not until 1871 that effect was given to the recommendations of the committee of 1858 and the Royal Commission of 1865, with regard to increasing the powers of the Board of Trade for investigating and reporting upon all casualties.

In 1873 the provision for the inspection of railways by the officers of the Board was still further extended, until it embraced every branch and department of railway traffic.

To this increase of authority given the Board of Trade, and to the wise and conservative manner in which that authority has been exercised, may be attributed the greater security to life and limb since attained.

By a bill introduced in 1873 it was intended to enforce the adoption of the block and interlocking systems; but the measure was abandoned, upon the recommendation of a select committee of the House of Lords, as the railways were making great exertions to extend these systems. The increase of exertion on the part of the railways was largely due to the promptings of the inspecting officers, whose increase of authority greatly added to their influence.

It appears from the foregoing statement that the several parliamentary inquiries had produced, up to 1873, only two practical measures for the prevention of railway accidents; namely, the requiring a means of communication between the different parts of trains, and the enforcement of the block and interlocking systems. The other recommendations contained in the various reports were but indirectly aimed against the danger of railway travelling; and, with two exceptions, full effect was given to them by the Statutes of 1868, 1871 and 1873. The exceptions are the proposals respecting the punctuality of trains, and compensation for injuries to passengers.

In June, 1874, under a pressure for additional legislation, in consequence of the increased number of accidents the year before, a second Royal Commission was appointed.

This commission made a most exhaustive inquiry into the subject, and, after spending over two years, reported in February, 1877.

It concurred in the opinion expressed by the previous Royal Commission, that it is undesirable to clothe a government department with unlimited powers to interfere with the detailed working of traffic upon railways, as such a course would relieve the companies from responsibility. It recommended that legislative measures be adopted, giving discretionary powers to the Board of Trade, subject to review by a competent appellate tribunal, to enforce the extension of sidings and stations; to enforce the adoption of the block and interlocking systems; to restrict the speed of trains under certain circumstances; to require companies to provide passenger-cars with continuous foot-boards; and to require companies to provide a watchman's lodge at public crossings for foot passengers. It further recommended that railway companies shall be required by law, under penalties, to supply all trains with sufficient brake power, under control of the engineer, to stop them within five hundred yards under all circumstances; that additional facilities be afforded the public for obtaining compensation when trains are late; and that there be an extension of civil liability of railway companies for accidents to their employees, and of criminal liability of persons in railway employment for acts of negligence endangering life.

It expressed the opinion that crossings of one railway over another on the level are an unnecessary source of danger, and recommended the Legislature not to sanction them in future. In regard to trespassers, it proposed that railway companies shall be empowered to enforce penalties without giving previous personal warning, as heretofore. It also urged the importance of adopting a uniform code of signals upon all railways. And it concluded by recommending that a judicial tribunal be constituted, to review the action of the Board of Trade in respect to matters of appeal.

The commission of 1874 did its work very thoroughly, and the report is a most interesting and valuable document; but it has been generally admitted that the want of unanimity on the part of the commissioners undoubtedly detracted from its influence, and resulted in no action being taken by Parliament on its various recommendations. Furthermore, the marked improvement which had taken place in regard to the safety of the travelling public since the Board of Trade received increased authority in 1871, led the public, as well as Parliament, to look to the instrumentality of the Board as a better means of attaining greater security against accidents than any direct legislative interference.

No other committees of inquiry have been appointed since 1874, and no important changes in the law, tending to the prevention of accidents, have been made since that time.

It will be observed, by the foregoing summary of recommendations by the various Parliamentary committees and commissions, that inquiries have been directed principally to the prevention of what is known as train accidents to passengers whilst actually travelling, and that little attention has been given to accidents to persons crossing the track at stations, to trespassers upon the right of way, or to the public at highway and private crossings. Only in the report of the commission of 1874 do these classes of accidents receive any special mention.

The reasons for this apparent inattention are, that the number of individuals killed or injured in each accident is comparatively small; that the sufferers are largely, if not solely, responsible for their own want of caution; and that the simple precautions adopted by the companies cannot well be improved upon.

Statistics of Railway Accidents in Great Britain.

The number of persons killed and injured on railways in Great Britain in the course of public traffic, during the last five years, is as follows: —

	1883.		1884.		1885.		1886.		1887.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, from accidents to trains, rolling stock, permanent way, etc.,	11	662	31	864	6	436	8	615	25	538
falling between cars and platforms,	36	48	29	61	25	49	16	40	19	61
falling onto platforms, ballast, etc.,	10	494	6	405	17	470	10	498	14	523
while passing on the line at stations,	38	14	41	22	35	11	23	17	37	20
closing of car doors,	–	60	–	48	–	71	–	80	–	72
falling out of cars when in motion,	7	37	7	30	5	26	13	17	2	23
other causes,	23	101	21	61	14	66	25	75	24	60
Persons passing over railways: at public highway level crossings,	36	38	37	15	32	16	47	18	29	28
at private level crossings,	23	7	14	9	11	4	19	5	21	7
at foot level crossings,	19	6	14	3	15	1	15	2	13	–
Trespassers,	293	165	295	187	250	126	205	91	203	114
Suicides,	61	–	53	–	55	–	80	–	70	–
Other persons, mostly private people on business,	56	75	40	76	41	74	52	71	40	69
	613	1727	588	1781	506	1350	513	1529	497	1515
Employees, from accidents to trains, rolling stock, permanent way, etc.,	11	87	23	115	13	81	4	81	8	109
other causes,	543	2373	523	2204	438	2036	421	1929	414	1966
	1167	4187	1134	4100	957	3467	938	3539	919	3590

In addition to the above-named accidents in 1887, the following occurred upon the premises of railways, but in which the movement of engines and cars was not concerned, viz. : —

	Killed.	Injured.
Passengers, on steps at stations,	3	139
falling over packages, etc., on platforms,	–	36
falling off platforms,	–	48
other causes,	2	71
Employees, loading and unloading cars,	3	979
moving goods in warehouses, etc.,	2	292
working at cranes and capstans,	3	162
falling of bales of goods, car doors, etc.,	2	363
falling from stationary engines or vehicles,	3	404
falling from platforms, ladders, scaffolds, etc.,	7	292
falling while walking on track or platforms,	2	225
attending to stationary engines in sheds,	–	190
trampled on or kicked by horses,	1	50
working on the line or sidings,	8	490
other causes,	3	256
Other persons who were transacting business,	19	160
	58	4,157

Thus, the total number of personal accidents during the year 1887 amounts to 977 killed and 7,747 injured.

As this inquiry is limited to the consideration of measures adopted and now in force in Great Britain for the prevention of a certain class of accidents only, — namely, to passengers whilst passing over the line at stations, to persons other than passengers passing over the line at level crossings, and to trespassers, — the following separation of these items from the foregoing table has been made for convenience : —

	1883.		1884.		1885.		1886.		1887.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, while passing over the line at stations,	38	14	41	22	35	11	23	17	37	20
Other persons passing over railways, at public highway crossings,	36	38	37	15	32	16	47	18	29	29
at private crossings,	23	7	14	9	11	4	19	5	21	–
at foot crossings,	19	6	14	3	15	1	15	2	13	7
Trespassers,	293	165	295	187	250	126	205	91	203	114
Other persons, mostly private people on business,	56	95	40	76	41	74	52	71	40	69
	465	325	441	312	384	232	361	204	343	239
Total killed and injured each year,	790		753		616		565		582	

Suicides are not included in this table, as the prevention of such occurrences is hardly possible by any precautions which the railways may take.

The figures show that there is a gradual and almost constant decrease in the class of accidents under consideration; which is owing partly to an increased appreciation of the danger of getting on the rails on the part of the public, but more especially to the greater care taken by railway companies, under the watchful eyes of the Board of Trade, for the prevention of accidents. The importance of this decrease will be more apparent when it is remembered that the number of passengers carried has constantly increased of late years. Not including season-ticket holders, the number of passengers carried in 1883 was 682,718,137; in 1884 was 694,991,800; in 1885 was 697,213,031; and in 1886 was 725,584,390. Season-ticket passengers would, if counted, increase these figures about twenty per cent.

It will be seen that the number of accidents to passengers in passing over the line at stations, and to the public at level crossings, has been reduced from 116 killed and 65 injured in 1883, to 100 killed and 56 injured in 1887.

The number of accidents to trespassers and to private people on business has been reduced from 349 killed and 260 injured in 1883, to 243 killed and 183 injured in 1887, — a reduction in four years equal to thirty per cent of the number killed and about the same per cent of the number injured.

Penalty for Trespassing.

Every railway company possesses the right, either by special Act at the time of incorporation, or under the general law, to pass by-laws for the government of the public while using the railway, and to impose penalties for disobedience, subject always to the approval of the Board of Trade.

The companies have adopted a uniform penalty of forty shillings for trespass; but, unfortunately, the law requires that personal warning shall first be given the offender, instead of permitting him to be dealt with summarily. The companies are now obliged to produce proof of warning after an arrest is made, which is not always easily done, as offenders are in the habit of giving false names, and otherwise avoiding the punishment of their own misconduct.

Crossing the Line at Stations.

Printed notices of warning not to cross the line, and painted signs in large characters directing passengers to bridges and subways for reaching other platforms, are posted in prominent places in all stations; but, unfortunately, they are placed among the multitude of

advertising signs and pictures which are unwisely permitted to cover the walls. This practice of covering the walls is carried to such an extent that it is with great difficulty that even the names of the stations can be made out by the passengers on the train; and many accidents consequently occur in getting off the trains to ask questions, and in hurrying on board again.

But the main reliance of all companies for the prevention of accidents to the public at stations, apart from the watchfulness of their employees and the exercise of proper caution on the part of the public, is in making it difficult *and always unnecessary* for persons to descend to the rails.

The platforms are from thirty to thirty-six inches above the track; they are continuous, and generally on a level with the foot-boards attached to each side of the car, about eight inches below the floor of the car. To descend from one platform, a distance of about three feet, and climb the opposite platform, without the aid of steps on either side, is not only a matter of some difficulty, but, even with the greatest care, is certain to result in soiling the hands and clothing of any one making the attempt. At all stations where the traffic is large, subways under or bridges over the track are provided with large signs directing passengers to their use; and a failure to use them is always regarded, in case of accident, as evidence of contributory carelessness.

It has been found, however, that passengers prefer to walk round a continuous platform at the head of the tracks at termini, rather than avail of bridges and subways, even if they are obliged, by so doing, to walk three or four times the shorter distance. Bridges are greatly preferred by the public to subways, however well the latter may be lighted and ventilated.

In London, Liverpool, Glasgow and other large termini, where the platforms are continued on a level round the head of the tracks, the bridges and subways are but little used; but at Manchester, Birmingham and other large way-stations the bridges and subways are always used by employees, as well as passengers.

At all stations, the ticket office, waiting rooms, refreshment rooms, baggage rooms and water closets are connected near the entrance, and there is nothing whatever to induce the passenger to go to the end of the long platforms, and descend by the ramps (inclined planes) to the track. If he does descend from the platform, it must be from idle curiosity or wilful misconduct, — not for any legitimate purpose; and in case of accident he would have only himself to blame. The rooms of the officers, porters and other employees are located on either hand beyond the rooms provided for passengers, and any one straying beyond them toward the ends of the platform would quickly be detected if he attempted to descend to the rails. Should a person

succeed in getting clear of the station without being observed from the platform, he would most likely be detected by the track hands or the switchmen in the signal boxes, and be warned or compelled to return.

It will be seen, by what has been said, that the great elevation of the platform above the track furnishes the best means of preventing passengers from crossing the line at stations.

Unfortunately for the safety of passengers in the United States, the high-level, or Brunel, platform, with its accompanying bridge or subway, is not likely to be adopted there; but, even if it were adopted, the persons for whom it would be intended would probably continue to take an indefinite risk of injury, in order to secure a definite gain in time.

One very effectual way, at way-stations in Great Britain, of keeping passengers and others from the track, is to have but one entrance and exit from the station, and to have that one midway in the building; the ends of the platform not communicating with the public highways, as they generally do in America. In case of double lines, or of passing-places (loops) on single lines, each track is required to have its own platform.

It will be seen by the tables that the number of fatal and other accidents in crossing the line at stations has not varied much during the last five years. It is doubtful if there will be any great reduction in the future, as there will always be some careless people, whom watchfulness on the part of the railway companies can never entirely protect.

Trespassing on the Permanent Way.

While walking on the track is very common in the colliery and a few other districts of the United Kingdom, where roads are few, and furnish but a roundabout way for laborers and others in going between their homes and their work, it is not so common as in America. The greater difficulty of getting access to the track, in consequence of better fences, closer watchfulness on the part of railway employees, and fewer highway crossings, coupled with a keener sense of danger where trains are run at great speed, will account largely for this difference. Except in the districts mentioned, the public highway furnishes an easier as well as safer road for the pedestrian. Any attempt in other districts to walk on the track in the daytime, where stations are close together, and employees of the road have nearly every foot of track covered by their sight, is almost certain of immediate detection; and any attempt to walk on the track at night is known to be so extremely dangerous, that it is seldom made except by would-be suicides and the most foolhardy persons.

Most of the accidents to trespassers occur to miners in the coal regions, who are frequently employed in the mines which supply the fuel of the railway whose track they walk over, and who come to be regarded in a measure as connected with the working of the railway. A large percentage of accidents also occurs in the mining regions, to persons not miners, but connected directly or indirectly with them, who cannot very well be distinguished by railway employees from them, and who use the track only occasionally. In fact, observation shows that accidents are more likely to occur to occasional trespassers than to habitual trespassers, who soon become familiar with the movement of trains, and learn how to avoid all difficulties.

In some parts of Wales and England, where the track affords about the only means of reaching certain mining or other isolated communities, it is the custom to issue a printed permit to walk on the track; but the clerk, teacher, physician, clergyman, member of a miner's family, or other person receiving the permit, is required to sign a bond of indemnity protecting the railway company in case of accident. In some respects these isolated communities resemble those in the far West of America, where railroads precede by many months the opening of public highways.

If the accidents to trespassers in the mining regions, where the trains are slow and infrequent, should be deducted from the total number of accidents in all the United Kingdom, it would leave but a very small remainder for the more thickly settled portions, where trains are run frequently and at high speed. In London and its immediate neighborhood, where some railways run over a thousand trains each day, a year will sometimes pass with only a single fatality to trespassers.

There are but few accidents to women and children trespassers, though many of them are in the daily habit of bringing warm dinners to the bread-winners of the family, wherever they may be at work in the yards or along the line; which fact is accepted as evidence that the occasional and not the regular trespasser is apt to become the victim of accident.

The strict accountability to which the railways are now held by the Board of Trade, coupled with the sincere desire of railway managers to do their utmost to prevent accidents, will account for the great reduction in the number of trespassers killed; namely, from 295 in 1884 to 250 in 1885, to 205 in 1886, and to 203 in 1887; and in the number of trespassers injured, from 187 in 1884 to 126 in 1885, to 91 in 1886, and to 114 in 1887. During the ten years from 1872 to 1881 the number of trespassers killed averaged 255 per year, and the number injured averaged 141. From the steps to be taken in the near future, a further reduction may be expected, notwithstanding the increase in

population along the line of the railways. The cancellation of all permits to walk on the track, and a rigid exclusion of miners, families of employees, and all others not directly connected with the operation of the railway, will contribute much to that end.

Some of the railways, notably the Great Western, not being satisfied with the general law regarding trespassers, have obtained special sanction from Parliament to deal summarily with all offenders, and are using the increased authority most rigidly and effectively.

Highway Crossings and Foot Crossings.

Before a railway is constructed, a detailed statement must be submitted to Parliament, for its approval, of every intended crossing, whether by other railways or by public or private roads. Many permissions were granted for level crossings in the early days of railways which would not be granted now. In fact, nothing but the most urgent necessity will now induce Parliament to grant a level crossing for anything but private roads and footpaths.

If the crossing is for another railroad, the block and interlocking systems must be provided. If for a public highway, maintained by the parish, the gates must be so constructed as to close across the railway, as well as across the road, at each side of the crossing; and a lodge or station house must be provided, unless the gates are worked from a signal cabin. The gates must not be capable of being opened at the same time for the road and railway, and all sidings and connections must be placed so that the shunting can be done without interfering with the level crossing.

Wooden gates are considered preferable to iron gates for closing across the railway.

When public roads are crossed on a level, signals in one or both directions, interlocked with the gates, and a foot-bridge over, or a subway under, the line, may be required.

Private crossings, constructed for the convenience of the owners or occupiers of land near the railway, are protected by gates, which are so constructed that, when not in use, they close of themselves by gravity. Not only do the persons using them cross at their own risk, but they are liable to penalty, under the general law of 1845, if they neglect to close the gates after passing through.

In a few cases keys are given to those using the gates, with a notice to keep them locked; but there is no legal obligation upon them to comply with the requirement, and the locking of the gates, being very unpopular, is practically a dead letter.

Foot-crossings almost invariably are protected by wicket gates, so constructed as to keep out livestock.

If, in the judgment of the Board of Trade, the safety of the public requires it, the railway company is obliged to construct a foot-bridge over, or a subway under, the track, at private crossings as well as at public crossings.

In all these matters concerning crossings, the Board of Trade has great influence, as well as in all other matters affecting the safety of the travelling public; and a recommendation from that body, so ably fitted for the position of advisers, and so well deserving the confidence reposed in it by the public and Parliament, would very likely be followed by the railway managers, at almost any cost, even though they might not concur with it in its opinion.

E. D. BARBOUR.

London, July 28, 1888.

Hon. Geo. G. Crocker,
Chairman of the Railroad Commissioners, Boston.

[C.]

SPECIAL REPORTS ON ACCIDENTS.

IN RELATION TO THE ACCIDENT ON THE WESTERN DIVISION OF THE BOSTON & MAINE RAILROAD, AT THE JUNCTION OF THE GEORGETOWN BRANCH WITH THE MAIN LINE BETWEEN BRADFORD STATION AND THE BRIDGE OVER THE MERRIMAC RIVER, ON TUESDAY, THE 10TH OF JANUARY, 1888.

Hearings, 13th, 14th, 16th and 17th of January, 1888.

The 1 P.M. express train from Boston consisted of locomotive and seven cars, as follows: No. 29, milk car; No. 31, baggage car; No. 123, parlor car; No. 91, smoking car; No. 403, passenger coach; No. 404, passenger coach; No. 36, passenger coach.

At the point where the accident happened there is a four-degree curve at the end of a tangent, which is down grade for trains going north. This curve is necessary in order to cross the Merrimac River at a right angle. The north-bound track is the outside or easterly track on this curve, and the Georgetown branch diverges from the out or east side of the curve. The Bradford depot is situated on the in or westerly side of the curve, near the end of the tangent. It is a rule of the road that trains shall not pass over the bridge at a speed exceeding fifteen miles an hour, and Engineer Warren French testified that, in accordance with his usual practice, he shut off steam at a point about one mile from the Haverhill depot; that he applied the air-brake, in order to reduce speed, at a point about a quarter of a mile from the Bradford depot, and having reduced the speed, as he thought sufficiently, he let the brakes off again; that the signals were all right for him, that the switch target for the Georgetown branch was right, and that the switch appeared to be locked. It appeared that the engine and the first three cars passed over the switch safely. They did not leave the track, and received no unusual jar except such as was imparted by the jerking of the cars behind them.

At or near the switch, or the frog beyond the switch, the smoking car left the track and ran along with its west-side wheels between

the rails. It did not disconnect with the car in front of it. As it approached the bridge it scraped along the side of a solid wooden fence, running parallel to the track. The wheels, which were between the rails, evidently struck pretty squarely against the guard rails of the bridge at the point where they were brought together in the centre of the track. Between them was a small gap which was not covered by any protecting cap. The rails bore marks which indicated that some wheel or wheels had passed through this gap. So far, then, as these wheels were concerned, the guard rail failed to accomplish its purpose.

By circular under date of December 20, 1887, this Board renewed and amplified the recommendations of its circular of 1881, relating to the floor system of bridges. The present accident enforces the importance of the subject. The following extracts from the latter circular are in point: —

The object of the guard rail is to prevent a derailed truck from getting far enough off the track to strike any portion of the girder, or from becoming twisted so as to lead to further derailment. . . . In addition to such guard timbers, guard rails are requisite, so arranged as to bring a derailed truck nearly back to its proper position and guide it across the bridge without allowing it to deviate more than a few inches from the rails. . . . The Board recommend the use of the inside guard rail, placed with a clear space of from seven to ten inches between the heads of the guard rail and the track rail, securely spiked to the ties, and with ends running to a point in the centre of the track on the side from which trains approach. The distance from this point to the end of the bridge should vary in different cases, but should not be less than thirty feet, and preferably sixty feet on important bridges. If the approach is on a curve, the guard rail should be carried farther, and on sharp and short curves it is advisable to extend them entirely around the curve, or to run them to a point thirty or sixty feet from the bridge, and from this point to carry a single rail in the centre of the track around the curve. The point of the guard rail should be protected by an old frog point, or by a bevelled wooden block, to prevent any hanging chain from catching on the end. . . . Finally, it is sometimes urged that a truck, if derailed far enough to get on the wrong side of the point, would be still further deviated by the guard rail. As long as a train holds together it is very rare for a truck to be off the track more than a few inches or a foot. If the train has parted and the truck is off by as much as one-half of the gauge, the wheels on one side of this truck would be off the ties, and a smash-up could hardly be averted, no matter what shape of guard rail were applied. Certainly, the ordinary form of outside guard rail would do no good. Furthermore, the possibility of such an accident at a bridge may be almost completely removed by extending either the guard rails or a single guard rail on curved approaches, as has been suggested.

The present case shows the wisdom of the foregoing recommendation. Had the guard rails been extended along the curve, or had even a single rail, midway between the rails proper, been extended along the curve, the trucks of this smoking-car would probably have been brought nearly into line before they entered on the bridge. As it was, the west wheels of the rear truck either passed through the unprotected gap between the guard rails, or passed on the wrong side of the point; so that the car advanced toward the bridge, its rear end being twisted much farther out of line than the front end. While moving forward in this position the car came in contact with the oblique end-post of the bridge. This post, fortunately, was stanch enough to resist the shock and throw the car over on its side on the flooring of the bridge. The connections of this car with the car in front were not broken until it struck the end-post. The forward cars and the engine came to a stand-still on the bridge, only a short distance from where the smoker lay.

Some of the ties on the bridge, where they were struck by the overturned smoker, were moved out of position. In the circular of last year relating to bridges, above referred to, is the following: —

> Efficient guard timbers outside of the rails should also be provided, notched on each tie and bolted at short intervals, the object of such timber being to hold the ties in place and to keep them from being bunched by a derailed wheel. Instead of notching the guard timber over the ties, it may be simply bolted, and spacing blocks securely fastened between the ties to keep them apart.

On this bridge the guard timbers were not notched on the ties, but the ties were bolted to them, and there were no spacing blocks between the ties.

The next car behind the smoking car, being the first of the three passenger coaches, went completely off the track on the east or outside of the curve. Whether originally derailed at the switch, or at the frog, it is probable that at the frog its wheels on the east side followed the rail of the branch track, and that its wheels on the west side were consequently brought across and into contact with the east rail of the main track, which gave way under the strain and let them through. The car ran on, completely outside the track, its rear end being farther out than its forward end, until it struck the heavy upright timbers supporting two rectangular water tanks, which stood at the side of the track, about midway between the Georgetown switch and the bridge. The space under these tanks was inclosed, and there was a stove in it, which was used to keep the water in the tanks from freezing. At the time of the accident there were five men in this inclosure, — four employees and one outsider. The day

was very cold, and they had gathered there to get warm. Such was the force of the blow that the timbers supporting the tanks were broken, and the tanks fell, crushing the men and the middle portion of the car beneath them. The centre portion of this car was so completely shattered by striking against these timbers and by the falling tanks that the car was actually cut in two, and its rear end was dragged away by its connection with the car behind, which car, together with the last car, went still further away from the main track to the east. The tank which fell upon the car was 20 feet long, 7 feet wide and 7 feet deep. It was full of water and must have weighed about 26 tons. The other tank was 30 feet long, 6 feet wide and 6 feet deep, was also full of water, and must have weighed about 28 tons. This tank did not fall upon the car, but was tipped over, so that the water was spilled upon and around the car.

When the first passenger coach struck the tank building its connections with the smoker broke. All the persons who were killed or seriously injured were either in this passenger coach or in the inclosure under the tanks. Of the five persons in this inclosure four have died. Ten passengers were killed and about fifty injured. There were probably about one hundred and fifty people in the train.

The switch for the Georgetown branch was a stub switch with Tyler attachment. The ends of the two inner rails beyond the movable switch rails — that is, the easterly rail of the main track and the westerly rail of the branch track — were battered and chipped off on both sides, and the webs of both rails showed slight cracks. The frog was not broken, but the point of the frog was a little bent. The guard rail opposite the frog was broken, but not thrown much out of place. The first rail beyond the frog, 16 feet and 2 inches long, was uninjured. The second rail beyond the frog was broken in three places. This rail, at the end nearest the frog, was about three feet from the nearest or westerly rail of the branch track, and at the other end about six feet from said rail, so that it was probably broken by the derailed trucks of the first passenger coach as above described. A rail near the tank house was slightly bent towards the centre of the track, probable by the forward truck of the passenger car which was demolished under the tanks. The switch frame, the switch rods and the movable switch rails were reported by those who examined them after the accident to be in excellent condition. The branch track was badly twisted and broken by the derailed cars.

The flange of the front wheel of the forward truck of the smoker on the east side was broken out for a space of about twenty inches, and pieces of the flange were picked up between the switch and the frog. This wheel was marked "J. S. Heartt, Troy, N. Y., 1886,

M. C. B. St'd, 1886. Pat. by G. W. Swett, Jan. 28, 1879." The break extended into the tread so far as to leave a width of tread of but two and one-half inches at the narrowest place. The fracture showed a depth of chill of from five-eighths to three-fourths of an inch along the tread, and of about three-eighths of an inch in the throat. The appearance of the fracture was not such as to indicate any serious defect in the iron.

The evidence which was obtained leads to the conclusion that the accident resulted from this broken flange. Some of the broken portion of the flange could not be found, so that it is uncertain whether the original break was at the switch or farther back.

The portion of the track where the accident happened combines many elements of danger. There is a curve with a long down grade tangent on one end and a bridge on the other. On the outside of this curve near its middle is a switch leading to a branch track. A branch track leading from the main track is always an element of danger, and the most dangerous place for such a branch to start from is from the outside of a curve. The outer rails on a curve are subject to severe lateral strains. Switch rods and switch rails, elements of danger anywhere, are peculiarly dangerous when subjected to such strains. The flanges of the wheels running on the outside of a curve are subject to corresponding strains. The presence of the Tyler switch increased these strains and added to the danger of breakage, because the movable switch rail being straight the continuity of the curve was broken; because a uniform elevation of the outer rail was not maintained; because the train passed from a movable rail, which always has more or less play and spring, on to a fixed rail, and because the opening between the end of a movable switch rail and the fixed rail was greater than the standard spacing between rails.

A wheel with a broken flange is apt to be derailed on a curve or at a switch or frog; when a switch and a frog are combined with a curve the probability of a derailment is increased. The Georgetown branch leads off at a point about 600 feet from the beginning of the bridge, so that a derailment might result in throwing cars into the river. The tank house was, moreover, so situated as to be a source of great danger in case a train should be derailed. If such a combination of dangers is necessary in any place, it becomes necessary, also, that the peril should be guarded against by running trains at a low rate of speed.

In the last annual report of the Board attention was called to the danger caused by unnecessary facing points. A facing switch for the Georgetown branch in this position seems necessary, but it is undoubtedly an element of peculiar danger, and, moreover, the Tyler switch is not the best which can now be obtained. This Tyler switch,

however, is specially authorized by Public Statutes, chapter 112, section 159, which reads as follows: "All switches hereafter laid in a railroad track used or intended to be used by passenger or mixed trains, including those so laid in renewal of existing switches, shall be of a kind known as the Tyler switch, or some other kind of safety switch approved in writing by the Board."

An inquiry in regard to the method of inspecting wheels showed that the inspection to which the wheels on this train were subjected on the day of the accident was a lamentable mockery. Charles Farnum, for twenty years a car inspector and having charge of the Prison Point car house, testified that he inspected the wheels of the cars of this train on the morning of the accident; that the wheels on the smoking-car were chilled iron, and not much worn; that he examined the wheels first in the car house, where it was somewhat dark, and then outside, where it was lighter; that he examined the wheels only on the outside and did not rap them but trusted to his eyesight, and though the dust and grease are not cleaned off the wheels after a trip he thought he could detect any flaws or cracks, and quoted as authority for his course some railroad men who, many years ago, said it was customary to rap wheels simply because it produced a good impression upon the public. The evidence of Felix Bolduc, who for a year and a half has been inspector at Lawrence, was equally unsatisfactory, though different in its character. He testified that he examined all wheels on the east side of the train when it stopped at Lawrence, and that he always struck them with a hammer, and that about once a week on the average he found one that did not ring. Upon being further questioned, however, he admitted that a wheel would not ring if the flange was against the rail, and that such was frequently the case; nor would it ring if the brakes were set against it, as they frequently were, especially at the beginning of his examination. Subsequently he stated that he frequently found wheels that did not ring when he struck them with the hammer, and also that in such cases he did not examine to see whether the failure to ring was due to the fact that the flange was against the rail or to the brakes being set, and that in fact his examination was the same, whether the wheels rang or not.

The accident has suggested an inquiry as to the relative merits of chilled wheels and steel-tired wheels, and the various roads have been requested to make returns to us of the number of wheels of each kind in use on their passenger equipment, of the breakages during the past year, and of certain other statistics relating to the same. From these returns the following statistics are compiled: —

RAILROADS.	Steel Tired.	Chilled.
Boston & Albany,	2,732	None.
Boston, Revere Beach & Lynn,	236	198
Providence & Worcester,	300	236
Fitchburg,	668	850
Old Colony,	774	1,524
Boston & Maine (Western Div.),	374	2,032
(Eastern and North'n Div),	176	1,716
(Lowell Div.),	614	2,274
Connecticut River,	88	312
New Haven & Northampton,	16	312
Housatonic,	124	Remainder of outfit.
Boston & Providence,	126	1,042
New London Northern,	–	All.

It appears, from the foregoing, that the Boston & Albany Railroad takes the lead, — its entire passenger service being equipped with steel-tired wheels. The superintendent of motive power of the Fitchburg Railroad reports that he deems steel-tired wheels the best, the most durable and the safest, and that the road is being equipped with them as fast as possible. The general manager of the Old Colony road reports that on all new passenger equipment they use forty-two-inch steel-tired wheels, that their largest locomotives have steel-tired wheels under trucks and tenders, and that the old passenger equipment is furnished, when renewals are required, with a heavy six hundred and fifty pound chilled wheel. The general manager of the Boston & Maine road states that under new passenger cars they are putting steel-tired wheels, and are making arrangements to replace cast-iron wheels under existing passenger cars, at the rate of about fifty per month, with steel-tired wheels. The superintendent of the Boston & Providence Railroad (before its lease to the Old Colony) states that they are putting in several varieties of chilled wheels and of steel-tired wheels, and expresses no preference. The officers of the Boston, Revere Beach & Lynn Railroad, of the Connecticut River Railroad, of the Providence & Worcester Railroad and of

the New Haven & Northampton Railroad likewise express no definite preference, as between steel-tired or chilled wheels. The general manager of the Housatonic Railroad states that they are taking out some of the steel wheels on account of defects.

The following extracts from communications on the subject of car wheels, generously forwarded at the request of this Board, are interesting and instructive: —

From Theo. N. Ely, General Superintendent of Motive Power of the Pennsylvania Railroad Company, under date of April 26, 1888.

This company does not purchase any cast-iron wheels for use under its passenger cars, and only such freight wheels as are bought with cars built under contract.

The contract for the cars always provides that the wheels, axles and other parts shall be according to specification, and an inspector is furnished from the Altoona Test Department to examine them before being used by the manufacturers.

I have no authentic information as to the price paid for these wheels by manufacturers.

As regards the percentage of wheels broken and cracked in passenger service, there were in 1887, ninety-nine wheels removed from passenger and locomotive service on account of being broken and cracked, the percentage being .004 (four tenths of one per cent.)

Of this number only thirteen were removed from passenger cars, the rest being from passenger and freight locomotives: the percentage for passenger cars was .001 (one tenth of one per cent.)

These defects were confined principally to cracked brackets and, in some cases, to broken treads.

The only written rules we have for inspection are contained in the little pamphlet which is sent you herewith, the more detailed instructions being given verbally by a competent chief inspector.

We also require that all Altoona wheels removed (and these are the only ones used in passenger service) shall be sent to Altoona, where they are reinspected.

At times, also the foremen of inspectors at different points are brought to Altoona and instructed in the examination of wheels, in their properties and in the nature of the defects that should cause removal, by which means we are able to secure very uniform methods and results of inspection.

Inspectors very generally tap wheels with a hammer when looking over the cars, but we do not regard this as of much value, as it really determines nothing.

Cracked wheels cannot well be discovered in this way, and unless the crack is long enough to be seen, a wheel with cracked brackets or treads, or small cracks between the plates, will generally give a clear sound when struck with a hammer.

It would be a very difficult matter to find a lot of cast-iron wheels taken promiscuously which would give forth the same sound when struck with a hammer, varying as it will with the hardness and density of the metal.

A wheel which gives a very sharp ringing sound would, generally speaking, be open to the suspicion of being too hard for safety.

Nearly all the cracked wheels removed from cars in service are taken out while the wheels are comparatively warm, due to the action of the brakes and, while in this condition, the cracks are easily located.

The great attention which the Pennsylvania Railroad has given to this subject for some fifteen or more years, first in selecting the best men and materials for making the wheels, followed by careful inspection, which includes a positive order to allow no wheel to run concerning which there is any doubt whatever, has, thus far, been the means of preventing the occurrence of any accidents of note, arising from the breakage of wheels under its own cars.

Regarding the mileage, all Altoona wheels, both freight and passenger, are cast from the same mixture, and as near as possible under the same conditions; but our records show that the mileage results are influenced entirely by the class of service in which the wheels are placed. For this reason the mileage record is divided into four classes, namely: —

1. Baggage, express and mail cars.
2. Passenger, combined and emigrant cars.
3. Passenger locomotives.
4. Freight locomotives.

The statement given below shows mileage results for the year 1887.

Passenger Equipment Cars.

WHEELS DRAWN.	Thirty-three Inch Baggage and Mail.		Thirty-three Inch Passenger, Combined and Emigrant.	
	Number Drawn.	Average Mileage.	Number Drawn.	Average Mileage.
Total number drawn, except those good for service,	1,974	54,847	5,700	39,668
Total number worn out, except sliding,	1,143	73,440	2,076	58,624

Passenger Locomotives.

WHEELS DRAWN.	Thirty-three Inch Tender Truck.	
	Number Drawn.	Average Mileage.
Total number drawn, except those good for service,	2,398	37,985
Total number worn out, except sliding,	964	51,377

Freight Locomotives.

WHEELS DRAWN.	Thirty-three Inch Tender Truck.	
	Number Drawn.	Average Mileage.
Total number drawn, except those good for service,	5,485	31,600
Total number worn out, except sliding,	1,165	52,705

The above figures show that wheels drawn from the first class give the best mileage results. This is accounted for by the fact that nearly all the cars comprising the first class make long runs with comparatively few stops, and therefore the wheels are not so often subjected to the injurious effects of the brakes, while cars in the second class of service are used largely on local trains where high speed and frequent stops render the service exceptionally severe.

This statement also shows that a comparatively low mileage is given by 33-inch wheels under locomotives, which is a further evidence that fast running, heavy loads and excessive breaking are very important features in considering the mileage results of wheels.

One thing should be constantly borne in mind, that the interest account is a very large item in the cost per thousand miles run of steel-tired wheels, arising from the fact that, regardless of what kind of wheels are under the cars, it is not practicable, under the best circumstances, to get more than an annual average of 42,000 miles per wheel (the average of the Pennsylvania Railroad passenger equipment); on many roads I presume this average would be still less.

The problem is, I think, as follows (approximately): —

Cast-Iron Wheels.

Cost of cast-iron wheels,	$10 00
Interest at 6 per cent. for twelve months (average life of wheels),	60
Cost of boring and fitting,	75
Total,	$11 35
Less scrap value of wheel,	5 00
Net cost,	$6 35
Average mileage of worn-out wheels, including sliding, drawn from passenger equipment in the year 1887,	42,522 miles.
Cost per 1,000 miles run,	14.5 cents.

Steel-Tired Wheels.

Cost of wheel,	$50 00
Interest at 6 per cent. for six years (average life of tire),	18 00
Cost of six turnings at $2.00 each,	12 00
Cost of handling and fitting,	5 00
Total,	$85 00
Less value of centre,	25 00
Net cost,	$60 00
Average mileage of steel tires on Pennsylvania Railroad, about,	250,000 miles.
Cost per 1,000 miles run,	24 cents.

We think that the very best cast-iron wheels should not cost more than $10.00, and the very best steel-tired wheel with wrought-iron centre, more than $50.00. We have assumed that the tires on the steel-tired wheels will average 250,000 miles before being worn out.

This is a little greater mileage than we have been able to get with some two or three thousand of these wheels that we have had, and it is all that some of the manufacturers will guarantee.

The difference in the cost between cast-iron wheels and steel-tired wheels, as shown by the foregoing statements, would be still greater to the Pennsylvania Railroad, as the wheels it manufactures cost very much less than $10.00.

SPECIFICATIONS OF THE PENNSYLVANIA R.R. CO. FOR THIRTY-THREE-INCH CAST-IRON CAR WHEELS.

Design.

The design of wheels must be such that they will be in accordance with the measurements shown in the drawing accompanying these specifications, and also such that the wheels made from them shall weigh between 525 and 575 pounds each.

Inspection.

Wheels must all be cast in true metallic chills of the same internal diameter and uniform cross section. The treads must be smooth and practically free from "sweat," and must have clear white iron extending to a depth of not less than $\frac{1}{4}$ inch at the throat, and with a variation of not more than $\frac{3}{4}$ inch throughout the same wheel. Each wheel must be so nearly cylindrical that when a true metallic ring is placed upon the tread and bears somewhere on the cone, it shall at no part of the circumference stand more than $\frac{3}{32}$ inch from the wheel tread. No wheel will be accepted whose circumference differs more than $1\frac{1}{2}$ inches or less than one inch from the circumference of the chill in which it is made.

The body of the wheel must be composed of soft gray iron, with uniform fracture and free from defects; each wheel must be capable of withstanding a pressure of forty-five tons in mounting on axle.

Test.

Representative wheels taken at random by this company's inspector will be subjected to a strength test, under a falling weight, in a machine like that shown on drawing accompanying these specifications, with an anvil block weighing seventeen hundred pounds set on rubble masonry two feet deep. Manufacturers furnishing wheels to this company will be required to provide one of these machines, and furnish wheels for test, as well as such facilities to the company's inspector as will enable him to test and inspect wheels promptly; they will also be required to give notice to the superintendent of motive power when wheels are ready for inspection and test. The wheels tested will be placed flange downward and rest upon the three supports on the anvil block, and be struck central upon the hub with a weight of one hundred and forty pounds falling twelve feet.

For each one hundred wheels which pass inspection at foundry and are ready for shipment one representative wheel shall be selected and tested as above described. Should this wheel stand five blows without breaking in two or more pieces the one hundred wheels may be shipped; but should this wheel break in pieces with five blows or less, two more wheels representing the same one hundred wheels shall be taken and tested, and if any two of the three wheels tested should break in pieces with less than three

blows, or if the average number of blows required to break the three wheels in pieces is less than four, the one hundred wheels will be rejected. Otherwise they may be shipped, but the shipment in any case will be made subject to the return of such as are found, upon boring and mounting, not to conform otherwise to these specifications.

Marks.

When wheels are manufactured under these specifications each wheel must bear a serial number, with name of maker and date of casting.

From J. N. Barr, Superintendent Motive Power of the Chicago, Milwaukee & St. Paul Railway, under date of March 15.

[In this communication the term "broken wheels" includes also those which were cracked.]

. . . During 1887 we had twenty-five steel-tired wheels fail from breakage, and fifty cast-iron wheels. These numbers are just about proportionate to the number of steel-tired and cast-iron wheels running. In January, 1888, we had eleven steel-tired and eight cast-iron wheels break, being a total of nineteen. Nearly all of the cast-iron wheels in service on this road are made by this company. My experience, as a matter of record both on this road and on the Pennsylvania road, is that steel-tired wheels are more liable to break than good cast-iron wheels. With steel-tired wheels every year of service increases the liability to breakage, and I feel pretty well satisfied that we have nearly reached the time when a sufficient number of steel-tired wheels are running to demonstrate in general that they are no safer, and not as safe, as a cast-iron wheel. The cast-iron wheel manufacture has been in this shape: wheels are made to meet the market, and a comparison of the strength of the different wheels shows that subjecting them to a blow on the outside single plate of a one hundred pound drop falling seven feet, that the average number of blows required to break a piece out varies from three to one hundred and thirty blows. The average number of blows which our own make of wheels will stand is not less than fifty. You will therefore see from this how wide a variation in strength there is in cast-iron wheels. The steel-tired wheel business at present is in a different shape. There is an endeavor made on the part of the steel-tired wheel makers to keep up the quality of the wheel, which so far has been successful, but business competition is increasing, and if competition becomes so close that the quality of the material and manufacture in steel-tired wheels is deteriorated, as is the case with cast-iron wheels, they will be more dangerous even than cast-iron wheels. I do not understand exactly why some of the steel-tired wheels break, but I am inclined to think that the operation of rolling a tire, forming the flange and forming the inside projection by which the wheels are always bolted, produces a lack of uniformity of the metal, making it liable to split. We have had a number of wheels break in this way. In a good cast-iron wheel we have the following condition: The wheel is in one piece, which of course removes any difficulty of parts coming loose; the tread is hard and unyielding, and in good wheels of uniform density presenting a surface to the rail of just the right condition to meet the requirements of the service. All

these peculiarities of construction, that is, the wheel being in a single piece, the body of the wheel of somewhat elastic texture and the tread being of excessive hardness, seem to meet the requirements of the service better than any other construction. I am of the opinion that specifications could be made up for cast-iron wheels which would insure a far safer wheel all through than can be possibly obtained by any construction of steel-tired wheels with which I am at present familiar. There has been a meeting of a committee of the Cast-Iron Wheel Makers, the Master Car Builders' and the Master Mechanics' Association, and a preliminary set of specifications have been drawn up. I will say that the specifications here proposed would exclude nine-tenths of the cast-iron wheels made in this country. They can, however, be lived up to, and if they had been in the past steel-tired wheels would never have gained a foothold.

From Herbert Wallis, Mechanical Superintendent of the Grand Trunk Railway of Canada, under date of February 24.

. . . The divisions of this system over which I have control in the mechanical department, including the old Grand Trunk and the Midland railways, operates 558 passenger, including Pullmans, and 13,120 freight cars, including snow-ploughs. The number of wheels in service under these cars is 109,564, of which 4,604 are in service under passenger and 104,960 under freight cars. The cast-iron wheels are chiefly made by Messrs. McDougall & Co. of Montreal, and the Detroit Car-wheel Co. . . . Cast-iron wheels are used entirely under the freight cars of this company.

The standard passenger car wheel has a centre composed of wrought iron or cast steel, either in the form of a disc or of spokes, giving with a three-inch tire an outside diameter of forty-three inches when new. Of these wheels we have 3,188 in service, or nearly seventy per cent. of the total in use under passenger cars, the balance being all cast-iron.

We commenced the use of this wheel as far back as 1875, and I think I may lay claim to having been the first railroad officer on this continent to introduce the steel-tired wheel of large diameter into this country.

I commenced by using the spoke wheel built up in sections and welded by hydraulic pressure. . . . This wheel has been largely used in England for all classes of services. . . . I have latterly introduced corrugated disc wheels made by Messrs. Krupp, the Phœnix Co. and the Bochumer Verein in wrought iron and cast steel, with the object of getting rid of some difficulties which have arisen from imperfect welds. The wheel manufactured by Messrs. Krupp & Co. in wrought iron being a coiled disc, and therefore welded, does not get over this difficulty as well as if made of cast steel; but I have not yet had sufficient experience of the disc wheels to enable me to form a correct opinion as to whether it would be policy to continue their use as against the wrought iron spoke wheels before referred to. We are ordering them, however, at present.

It is proper for me to say that the tires, after being shrunk on to the wheel centres, are secured by what is known as the Mansell retaining ring, which prevents the tire getting away in case of breakage. . . . This work of fastening is largely used in Great Britain. There have been no

cases of damage caused by the breakage of a tire on this railway with this class of fastening. . . .

I inclose also a statement showing the mileage service of tires from these wheels, including a summary of those which have been worn out to date, from which you will see that the average mileage per tire has been something over 162,000, with a maximum of over half a million, and a minimum of 6,000.

You will, of course, understand that the mileage to be obtained from a tire depends upon its hardness and ability to resist abrasion. The problem which tire makers have to solve is how to combine hardness and toughness in such a manner as to obtain the maximum of strength and wearing quality.

An examination of the statement I send you tends to show that the quality of the tires recently received has not been as satisfactory as that of those which were put in during the early part of our experience, and that therefore the average mileage (by no means an unsatisfactory one, however,) could be increased by an improvement in the quality of the steel.

You will remark that in two cases only have accidents happened through failure of the wrought-iron wheel, and in neither case, I am glad to say, was the result serious. It is, however, the failure in these two cases which prompted me to consider the use of disc centres.

The test we apply to cast-iron wheels before putting them into service, is striking them on the hub with four swinging blows with a forty-pound hammer. This test, I am aware, is not by any means a severe one, but it is used merely to find out flaws or incipient cracks which would possibly result from unequal contraction and want of proper annealing. We have sufficient evidence to show that it answers its purpose, though it does not prevent the wheel breakage which seems unavoidable at times — particularly in the winter — with cast-iron wheels.

In regard to the breakage of cast-iron wheels, I find that there have been discarded for breakages or cracks, during the past year, 154 wheels from passenger and 2,179 from freight cars, being at the rate of eight per cent. in the former and two per cent. in the latter per annum. To these breakages the first four months of the year contributed eighty-two per cent. in passenger and forty-four per cent. in freight service, showing the destructive influence of a rigid road-bed.

From the Chicago, Burlington & Quincy Railroad Company, under date of February 3, Henry B. Stone, General Manager; G. W. Rhodes, Superintendent Motive Power, the following: —

. . . Under passenger equipment, which includes passenger, baggage, mail and dining cars, we have 296 forty-two-inch steel-tired wheels, 116 thirty-three-inch steel-tired wheels, 2,680 thirty-three-inch Bouton cast-iron wheels.

Of the 296 steel-tired wheels the largest number are paper wheels. There are also some 30 or 40 Paige steel-tired wheels.

Of the 116 thirty-three-inch steel-tired wheels the largest number are also paper steel-tired, with about 40 Washburn wheels. . . . Our freight equipment is fitted exclusively with cast-iron wheels. . . . Our material specification . . . for wheels of all classes is as

follows,—one-third Salisbury iron, one-third Hanging Rock and Southern Pig irons, one-third old wheels.

Under passenger cars we find no cast-iron wheels removed during 1887 on account of being broken. There were a few cases of cracked flange and rim of wheel cracked, but no more so than we have had with steel-tired wheels. One forty-two inch steel-tired wheel under a mail car split through the centre in service, and one forty-two-inch paper wheel under a Pullman car broke through the tire, letting a large piece out which derailed the train. In the latter case the tire was worn too thin, having reached $\frac{1}{8}$ inch thickness. . . . Under our fast passenger car service we are now advocating the use of a forty-two-inch wheel, and inasmuch as this size of wheel when made of cast-iron is so exceedingly heavy and also difficult to manufacture, we are now advocating the use of a lighter steel-tired wheel. For all other services we are using cast-iron wheels.

From Pullman Palace Car Company, under date of January 27, George M. Pullman, President, the following:—

. . . About twelve years ago we put a number of the Allen paper steel-tired car wheels under some of our cars running between Chicago and New York, and, after a trial of the same, adopting them as our standard wheel, and now have in service, in all sections of the country and in Mexico, over 11,000.

Safety, economy and smoothness in running are the strong points considered by this company in equipping its cars with paper wheels. Over 3,000 of these wheels have exhausted their original tire and the centres have been re-tired, some twice and some for the third time. Of the 3,000 wheels which have been re-tired, the first tires made an average mileage of 340,843 miles per tire in service, and our mileage statistics show the service of each successive tire to be equal to that of the first; also that there is less liability of the axle breaking from crystalization when used with paper wheels.

Very few tires have broken in service during the years we have used this wheel, and in no case has a passenger been injured by their breakage. In some notable cases a car with a broken wheel was able to travel several miles without derailment or damage to the car,—due, in our opinion, to the fact that the paper centre will not fracture or break as in case of metal centres.

From the Atchison, Topeka & Santa Fé Railroad, under date of February 13, George Hackney, Superintendent of Machinery, the following:—

. . As we do not use cast-iron wheels under our passenger equipment we have no means of arriving at the relative value of paper and iron wheels, so far as their service under passenger equipment is concerned.

I give you below the information requested by Mr. Strong covering paper wheels under passenger equipment and iron wheels under freight equipment; and regarding the latter, will say that we do not keep a record of the actual number of miles run by each wheel under freight cars, as such a thing is impracticable and is not done on any road. The wheels are purchased on a time guaranty, and are so treated in our records.

Paper Wheels.

The average life of wheel centre has never been decided upon, and, as explained to you in my letter of the 25th ultimo, we are unable to give it. The tire of a paper car wheel when new is two and one-eighth inches thick, and the average life is three years and nine months. The average miles run for one-sixteenth inch wear of the tire is 14,000.

In the past we have kept tires in service until they are reduced to seven-eighths of an inch in thickness, therefore making the average life of a tire as to mileage 280,000 miles. It is the opinion of experts, and experience has taught us, that it is not safe to retain a tire in service after it is less than one inch in thickness, and, therefore, we are now condemning tires of less than that thickness.

Cast-iron Wheels.

These wheels are guaranteed to us for three years' freight service, and our records show their average life to be five years and three months; and at as close an estimate as it is possible for us to make, they run between 57,000 and 60,000 miles.

The number of paper wheels purchased in the year 1887, for both old and new equipment, is as follows, and includes the wheels purchased for new cars and locomotives, all of which have not been received as yet: —

New Equipment.

28-inch wheels,	524
30-inch wheels,	412
33-inch wheels,	884
42-inch wheels,	1,704
Total,	3,524

Old Equipment.

26-inch wheels,	24	
28-inch wheels,	64	
30-inch wheels,	34	
42-inch wheels,	108	
		230
Total for old and new equipment,		3,754

From J. F. Goddard, General Manager of the Atchison, Topeka & Santa Fé, the following: —

. . . The Allen paper wheel is our standard for passenger equipment and passenger locomotives. We also have several paper wheels of the Allen pattern under our freight locomotives, and they are considered the safest and most durable of any wheel manufactured.

The average number of miles run by paper wheels per one-sixteenth inch wear of the tire, during the year 1887, is 13,947.

The average mileage of a paper wheel centre we are unable to give, as they are virtually indestructible, and can be re-tired indefinitely. The Allen Paper Wheel Company maintain the centre of wheels, when once sent out, free of expense to the purchasers; and if the wheel has loose

plates through the hub or tire it is replaced to us by that company free of charge. The cost of re-tiring a forty-three-inch paper wheel is about $53, and the guaranty for the tire is 200,000 miles. A re-tired wheel is considered in every respect equal to a new one, and the same guaranty of mileage of tire applies to both new and re-tired wheels.

Our records show the following failures of paper wheels during the year 1887: —

Two engine truck wheels, 28 inches in diameter, — broken hubs.
One engine truck wheel, 30 inches in diameter, — broken hub.
One engine truck wheel, 30 inches in diameter, — broken plates.
One coach wheel, 42 inches in diameter, — tire split.
Two coach wheels, 42 inches in diameter, — tires broken.
One coach wheel, 42 inches in diameter, — bolts in plates broken.

The above are the only serious defects discovered by our mechanical department during the year.

While the foregoing authorities differ on the question whether a steel-tired or a cast-iron wheel is the better, they all agree that if cast-iron wheels are to be used they should be manufactured in accordance with carefully drawn specifications, and should be subjected to thorough test before use. The statement made by Mr. Barr of the Chicago, Milwaukee & St. Paul Railway, that nine-tenths of the cast-iron wheels in use would fail to conform to such specifications as should properly be made, is startling, but without doubt true. Statistics seem to prove, moreover, that the best of steel-tired wheels are safer than the best of cast-iron wheels. It is certainly an element in favor of the steel-tired wheel that it will do the work of between five and ten cast-iron wheels. The degree of danger rapidly increases as a wheel approaches the condition of being worn out. This danger recurs in the case of cast-iron wheels five or ten times as often as in the case of steel-tired wheels, and the safety of the passengers is, therefore, in the case of the cast-iron wheel, to a much greater degree dependent upon thoroughness of inspection. The managers of the main lines of road in this State generally agree that the steel-tired wheel is the safer and better wheel for passenger service.

In the return made by the Boston & Maine Railroad Company to this Board, it appears that on its western, eastern and northern divisions it has five hundred and fifty steel-tired wheels in use, and that none of these were broken or cracked during the past year, and that of the 3,748 chilled wheels in use on those divisions eighteen were found to be broken or cracked. This is about four and four-

fifths to each one thousand, being a slightly higher percentage than that reported by the Pennsylvania Railroad Company. The Atchison road, however, which uses steel-tired wheels only in its passenger service, reports only four failures during the year out of 3,866 wheels on passenger cars, or at the rate of about one in a thousand; while the Boston & Albany Railroad, with 2,732 steel-tired wheels, reports not a single failure from breaks or cracks. These differences in results may be attributed to differences in road-bed, or to greater care in inspection, but they should serve as a guide-post to the goal of safety.

The indications derived from statistics in this country, that the steel-tired wheel is the safer, are abundantly confirmed by the returns of the English roads. From the reports of the British Board of Trade it appears that in Great Britain chilled cast-iron wheels are not used. The body of the wheel is made of wrought-iron or wood, and the tire of wrought-iron or steel. An essential feature of the wheel is the retaining ring, clip or other device, by which the pieces of the tire are kept in place after breakage. So far as the body or core of the wheel is concerned, substantially absolute safety has been obtained.

We are indebted to Prof. C. F. Allen of the Massachusetts Institute of Technology for the following deductions from said reports: During the past ten years the total failures of passenger car wheels in Great Britain have been only one hundred and four, an average of about ten per year, or one failure per annum out of every fifteen thousand wheels. For the past seven and one-half years not a single person has been killed or injured from failure of tires, and for eleven and one-half years none have been killed, and only five injured.

The relative cost of steel-tired and chilled wheels has long been in dispute. The following figures, prepared by Prof. George F. Swain, are submitted to furnish a basis for estimates in regard to the relative cost of the different classes of wheels. Take two classes of cast-iron wheels: —

1. Price, $10.00; cost of fitting and removing, $1.00.
 Value as scrap, $5.00.
 Mileage, 30,000 miles — one year (assuming the daily mileage as about 85 miles).
 Then, at 4 per cent., the present capital necessary to renew this wheel indefinitely is $159.50.
2. Price, $12.50; cost of fitting, $1.00.
 Value as scrap, $6.00.
 Mileage, 60,000 miles — two years.
 Then, at 4 per cent., the capital required to renew this wheel indefinitely is $104.50.

Now find how much, with the same present capital, could be paid for a steel-tired wheel, renewing it indefinitely. Take four classes of steel-tired wheels : —

a. A wheel not to be re-tired; four turnings at 60,000 miles, or two years service for each turning, — total mileage, 240,000 miles.
Cost of turning, $1.00 every two years (a very low estimate).
Value as scrap, $10.00 every eight years.

b. A wheel not to be re-tired; four turnings at 120,000 miles, or four years' service for each turning, — total mileage, 480,000 miles.
Cost of turning, $1.00 every four years.
Value as scrap, $10.00 every sixteen years.

c. A wheel to be re-tired; centre indestructible; four turnings at 60,000 miles, or two years' service for each turning.
Total mileage, 240,000 miles, — eight years.
Cost of turning, $1.00 every two years.
Cost of re-tiring, $30.00 every eight years.

d. A wheel to be re-tired; centre indestructible; five turnings at 90,000 miles, or three years' service for each turning.
Total mileage, 450,000 miles, — fifteen years.
Cost of turning, $1.00 every three years.
Cost of re-tiring, $50.00 every fifteen years.

The following table gives the price which could be paid for the four classes of steel-tired wheels, *a*, *b*, *c*, *d*, using the same capital as is necessary for the respective classes of cast-iron wheels, interest being reckoned at four per cent. : —

Steel-tired Wheels.	Cast-iron Wheels.	
	Class 1.	Class 2.
Class *a*,	$47 00	$32 00
b,	77 00	51 00
c,	69 00	13 60
d,	90 00	36 00

Remembering that the cost of steel-tired wheels is generally over $50.00, it is clear from these figures that a cast-iron wheel of Class 2, i.e., one which, costing $12.50, would last for a period of two years, would be considerably more economical than any of the steel-tired wheels considered, excepting those of Class B, of which the mileage is assumed to be four hundred and eighty thousand. This average mileage has not yet, however, been attained. On the other hand, while some authorities claim that the mileage of good cast-iron wheels, under passenger traffic, will not exceed thirty thousand miles on the average, other authorities state that it will run up to fifty or sixty thousand miles.

Comparing steel-tired wheels with cast-iron wheels of Class 1, there is but little difference in cost. It cannot, therefore, be stated absolutely that cast-iron wheels are cheaper than steel-tired wheels. Some classes of cast-iron wheels are cheaper than some classes of steel-tired wheels, and the reverse is also true. The difference in cost is not such as to override questions of comfort, convenience and safety.

Summary of Recommendations.

The investigation of this accident could have been made in a much more satisfactory manner if the company had notified the Board immediately in regard to it; and attention is called to a paragraph in the report of the Board for this year, on page 28, in which the request is made that the Board shall be notified at once, by telegraph or telephone, of any serious train accident. At the time when this accident happened, the above request had not been published. This was also a case in which it would have been possible to take photographs of all portions of the wreck and of the road-bed, showing the condition of the cars and the tracks after the accident, and such photographs would have been of great assistance. This subject is also spoken of in the report, and the attention of the railroad companies is hereby again directed to these requests.

The danger of placing the tank structure on the outside of the curve has been demonstrated. It should be removed to a position on the inside of the curve, and the Board has already received the voluntary assurance of the general manager of the road that it will be so removed as soon as the weather will permit.

The ties on the bridge should either be kept in position by spacing-blocks, or else a new guard timber should be laid, notched on each tie.

The guard rails should either be extended to the frog, or else extended to a point sixty or one hundred feet from the bridge, and then a single guard rail carried from a point where they meet in the centre of the track to the vicinity of the frog. The ends of the guard rails, or of the single guard rail, should be furnished with a suitable cap.

A facing switch for the Georgetown branch should, if possible, be avoided altogether; or, if this is impossible, it should be carried back to some point on the straight track. If this also is impossible, the rate of speed for trains going north at the point where the trains enter upon the curve should be limited to fifteen miles an hour.

Although the statute before referred to authorizes the use of the Tyler switch, this Board does not deem it the safest or best switch now obtainable, and recommends that it be changed.

The foregoing recommendations apply not only to the place where the accident happened, but to all other places where there are similar elements.

A thorough examination should be made of the employees engaged in the inspection of wheels throughout the lines operated by the company, and they should be instructed as to their duties, and held up to a strict and faithful performance of them. The men engaged in this work are apt to lapse into a perfunctory performance of it, and they should be kept up to the standard by frequent supervision and examination. Thorough organization, definite accountability and a systematic examination of employees as to their qualifications for their duties, and as to their manner of performing them, are subjects of such importance and urgency, and deserve such extended consideration, that this Board proposes to discuss them at length in its next annual report.

As freight trains and passenger trains are constantly passing each other at speed, and as the wheels on freight cars come from all parts of the country, and are therefore of uncertain quality, the rigid inspection of them is no less important than the inspection of passenger car wheels.

The general manager of the Boston & Maine Railroad writes as follows: "Under every new passenger car that we are now building we are putting steel-tired wheels, and are using more of the Snow wheel than any other, because I consider it the best wheel made. I have also made arrangements to replace the cast-iron wheels that are under our passenger cars now, at a rate of about fifty per month, with steel-tired wheels, which will be of the Snow pattern." The Boston & Maine Railroad, therefore, is gradually diminishing the number of cast-iron wheels in its passenger service.

This fearful accident enforces the necessity of more stringent specifications, more searching tests, preparatory to the purchase of wheels, whether cast-iron or steel-tired, and whether to be used in the passenger or in the freight service, and a more scrutinizing and thorough inspection. The railroads of the State have had one of their great sad object lessons. They should profit by it, and act upon the instruction which is to be gathered from it. By this terrible demonstration of dangers, the standards of approaches to bridges, of the location and style of switches, and of the manufacture and inspection of wheels, have been raised. Conditions which have heretofore been excusable are no longer permissible.

GEORGE G. CROCKER,
EDWARD W. KINSLEY,
EVERETT A. STEVENS,
Commissioners.

April 28, 1888.

DERAILMENT AT THE FOREST HILLS STATION OF THE BOSTON & PROVIDENCE RAILROAD, ON THURSDAY, THE 12TH OF JANUARY, 1888.

Hearing January 17. George Putnam appeared for the corporation.

The 6.05 P.M. train from Boston to Readville consisted of baggage car, smoker and five passenger cars. The train was on the third track, so called, being the right-hand track going out. The train stopped at Forest Hills Station as usual. The station platform extends about 110 feet beyond the point where the West Roxbury branch diverges, and follows the line of the branch. The rear truck of the rear car, instead of following the other cars on the main line, passed on to the branch, the train having then acquired a speed of eight or ten miles an hour. The forward truck being on the main track, and the rear truck on the branch track, the car was twisted sideways, struck the gatekeeper's house, situated between the main line and the West Roxbury branch, pushed it across the West Roxbury branch, and killed the gate keeper, Peter Finnegan, just as he was trying to escape from his gate-house. Another man and a newsboy who were in the house succeeded in escaping.

The switch was a split switch, and after the accident was found to be in perfect order. The switch stand is ten or twelve feet from the track, the platform aforesaid being between it and the track. At the time when the train was passing, the switchman, Patrick Leonard, was standing at the switch frame waiting to throw the switch for the West Roxbury branch train, which was due in about five minutes. He had been for four years assistant switchman at this Forest Hills Station, and for the previous three months had been the head switchman there. The only reasonable explanation of the accident is, that the switchman must have thrown the switch after the front truck of the rear car passed over it, but before the rear truck reached it. He was careless and in too much of a hurry. The switch frame was in a bad position. The platform was between it and the track, and on the rear side of the platform was an open fence. The platform was also about one foot above the ground where the switchman had to stand. This condition of affairs, though objectionable, does not excuse the switchman, because at the time there was nobody on the platform to obstruct his view.

The investigation called attention to the fact that the switch target is so placed that it is difficult for engineers to see it at any time, and

so that their view of it may be completely obstructed by people standing on the platform. This condition of affairs ought not to be allowed to continue. The Board recommends that an interlocking system be established at this point.

For the Board,

GEORGE G. CROCKER,
Chairman.

Feb. 4, 1888.

ACCIDENT ON THE FITCHBURG RAILROAD, NEAR WILLIAMSTOWN, ABOUT MIDNIGHT ON THURSDAY, THE 26TH OF JANUARY, 1888.

Hearing Friday, 3d of February, 1888.

It appeared that three freight trains were stalled in the snow a short distance west of Williamstown; that the rear freight train was No. 57, and that the mixed passenger train, No. 37, consisting of a box car, a combination car and a coach, ran into the rear of freight No. 57, demolishing the caboose, killing the conductor and one brakeman, and injuring another brakeman.

Brakeman Martin Madden, who was on freight train No. 57, left his train before it came to a stop and went back with a red lantern, a white lantern and some torpedoes to protect the rear of his train. Six hundred and forty-five feet back of the point where the rear end of his train stopped, was a flagman's shanty at a crossing. He left his train near this shanty, and walked back on the track to a point which was afterwards found to be thirteen telegraph poles distant from the rear of his train, where he put two torpedoes upon the rails on the same side of the track. He had previously removed from these torpedoes the tail piece, which is intended to be bent down between two rails at their junction to prevent the torpedo from slipping.

It was a bright moonlight night, but one of the coldest nights of the winter, and the cold and the blowing snow made it excessively severe. The brakeman felt that he could not stay at the point where he placed the torpedoes, and testified that he found that his lanterns would be of little use, as they became rapidly coated with snow and ice, and the oil seemed to be freezing, so he returned to the shanty at the crossing, and found there a brakeman who had come on a light engine which was helping to break the blockade. He further stated that he put one red lantern on the ground between the rails at the crossing, and then he and the other brakeman devoted

themselves to cleaning up the other red lantern which they had, preparing it for service when the first lantern should become indistinct. The brakeman of train No. 57 had been there about an hour, when mixed train No. 37 came by. After the accident the cage of a broken lantern was found near the shanty. M. C. Baldwin, the engineer of train No. 37, testified that the front of his engine was completely covered with snow so that he could not see out of the front window, and could only get a view of the track by putting his head out the window at his side. He did not hear any torpedoes explode, and in fact, the torpedoes put out by brakeman Madden were subsequently found at the side of the track, dented a little on one side, but not exploded. The engineer further stated, that a short distance before he came to the crossing at the shanty, he had his head out the window, looking forward, but the engine ran into a snow drift and threw the snow up so that he was blinded, and was obliged to draw his head in and wipe his eyes before he could see anything. He did not discover any red lantern between the rails, but as he passed the shanty he caught sight of two red lights which he thought were on the platform of the shanty (see testimony of brakeman Madden, *ante*), and immediately applied the brakes and reversed his engine, which he succeeded in doing, notwithstanding the collected snow made it difficult. He thought that he was going at the rate of about twenty-five miles an hour when he passed the shanty, and that his speed when he struck the rear of the freight train was about ten or twelve miles an hour. His fireman jumped, but he did not. His engine demolished the caboose car and did some injury to the car in front of the caboose, and the front of the engine was broken and disabled. The engineer escaped without injury.

The accident was due to the failure of brakeman Madden to take sufficiently effective measures to notify the following train. If he had applied the torpedoes with the tail piece on, it is probable that they would have exploded. It seems that he was in the habit of removing the tail piece so that he could jump off his freight train, fasten the torpedoes to the track and catch his train while it was in motion. This he could not do if he were obliged to go to a joint between the rails and fasten the tail piece into it. On the occasion in question he had plenty of time, of course, to apply the tail piece properly, but it had been previously removed by him.

The rules of the different divisions of the Fitchburg Railroad, in relation to the duties of the rear brakeman, lack uniformity. The rules of the Western Division, as printed on the employees' time table, differ from the "Special Rules and Regulations to be observed by employees," printed in book form and marked No. 2. The former rules govern employees on the Western Division of the road. The

latter rules were published in 1886 to govern employees on what was then known as the Fitchburg Railroad. Rule 85 of the latter series is as follows: "In case of an accident, or when a train is unable to proceed at the required rate of speed, or is delayed or stopped from any cause, excepting only the regular stops made on time at stations, the first duty of the conductor, engineman and all other employees is to see that efficient measures are taken to stop other trains before reaching the obstruction or imperfection in the track, or the delayed train. An efficient man (*and in all cases of more than ordinary danger, two men*) must be sent backwards or forwards or both ways, as the case may require, with the proper red signals, torpedoes *and fusees, at least a half mile* (*twenty telegraph poles*) or farther, if upon a curve or grade."

Rule 54 of the General Rules of the Western Division, printed on the employees' time table, is as follows: "In case of accident or detention, the first duty of the conductor, engineer and all other employees, will be to see that proper signals are sent in the direction of approaching trains. A signal man must be started at once, with instructions to show a red flag or red light, and place a torpedo on the rail at such distance from the detained or disabled train that the approaching train will have ample time to stop. When the flagman is recalled, he should leave two torpedoes as a caution signal. Fusees may be used instead of torpedoes as caution signals, if trains are supplied with them."

This rule differs from rule 85 of the book series, in that there is no requirement that in cases of more than ordinary danger two men must be sent out; also, in that the distance which the brakeman is to go is not defined as "at least half a mile, twenty telegraph poles, or farther, if upon a curve or grade," but such a distance "that the approaching train will have ample time to stop;" also, in that the brakeman is not required to take fusees, but may do so.

Rule 54 is not sufficiently explicit, and leaves too much to the judgment of the brakeman. Brakeman Madden did not go back far enough, even in placing the torpedoes; and if the cold was so severe that he could not stay out continuously on the track, he ought to have left a lantern with the torpedoes, to have replaced it from time to time, and to have stayed out there as much as possible. His remaining in the shanty one moment more than was necessary to get warm, was wilful negligence. In order to save himself from suffering with the cold, he knowingly violated the rules, and through life he will remember that two of his fellow employees met their death in consequence of his neglect.

The other brakeman who was in the shanty should have taken turns with him in guarding the track, or should have guarded it alone to

the best of his ability if Madden failed to do his duty. Unfortunately, the other brakeman had only been in the service three months, and did not appreciate, until too late, that the knowledge that danger to life existed by reason of Madden's neglect imposed upon him the supreme duty, and opened to him the grand opportunity, to avert that danger.

The conductor of train 57, who was killed, was negligent in that he did not make suitable provision for the safety of his train. The cold was so intense that he ought to have known that a brakeman not under shelter would be likely to be overcome, and he should have sent a second brakeman to relieve the first. Such action was clearly demanded, not only as a precaution to secure the safety of his train, but also to save his brakeman from unnecessary and dangerous exposure. Furthermore, brakeman J. R. Lamb, who was in the caboose with the conductor, and who escaped, testified that the conductor, some time previous to the accident, noticed the red lights on the ground near the shanty, and expressed his doubts as to whether the man was not asleep inside.

In 1882 this Board sent a circular to the president and directors of the several corporations operating railroads in Massachusetts, calling their attention to the rules governing the action of a rear brakeman in case of a detention of his train. In that circular, special mention is made of the fact that torpedoes fail with annoying frequency in snowy weather, being brushed from the rails at such times by the snow and ice pushed ahead of the engine, and a wider use of fusees is recommended, which are spoken of as being specially valuable in a driving snow-storm, since they illumine the whole track and the falling snow-flakes.

The circumstances were such that the conductor ought not only to have sent out a second brakeman to relieve the first, but he ought to have seen that the brakemen were sufficiently supplied with fusees so that they could keep them burning all the time if need be.

For the Board,

GEORGE G. CROCKER,
Chairman.

Feb. 21, 1888.

ACCIDENT ON THE CONNECTICUT RIVER RAILROAD, ABOUT TWO MILES NORTH OF HOLYOKE, AT JONES' CUT, ON FRIDAY MORNING, JAN. 27, 1888.

Hearing at the City Hall, in Holyoke, on the 31st of January, 1888, and by adjournment at the office of the commissioners in Boston, on the 9th of February, 1888.

It appeared that John Shea, James Kennedy and Martin Griffin were instantly killed, and Michael Connor received injuries from which he died, by being struck by down train No. 12 while they were engaged with sixty or seventy other men in digging out a train stalled in the snow in Jones' Cut, so called. This cut is about six feet deep. The stalled train, having two engines, was on the west or south-bound track, and behind it was a relief train consisting of two engines and a car. The track behind these two engines was duly protected at first by a flagman, and subsequently also by telegraphic orders. The train became stalled at two or three o'clock in the morning, and was not finally dug out until evening. While it obstructed the track, south-bound trains as well as the north-bound trains passed between Smith's Ferry and Holyoke, on the north-bound track, running by telegraphic orders. At the time of the accident, which was about nine o'clock in the morning, there were some seventy men at work shovelling, and they were taking the snow from the east side of the stalled train and carrying or throwing it across the east or north-bound track. John R. Patch, the roadmaster; John D. Brewer, section master of this section of the road; Horace A. Lunn, section master for Holyoke yard, and Albert M. Bartlett, section master for Springfield, were present superintending the work.

The thermometer was below zero, and the wind was blowing from the north in strong gusts, which carried the snow with it in cutting clouds. Looking south, the track could be readily seen for a sufficient distance, and two trains from the south passed without accident, the men having received sufficient warning. Train No. 12 came down from the north a few minutes after nine. It struck a drift a short distance before reaching the cut, and advanced in a cloud of snow. So thick was the cloud, and so completely was the view obstructed by snow on the window and by steam caused by the snow falling on the boiler, that the engineer could look ahead only by putting his head out of the window at his side, and even then he could see only a short distance.

He discovered an object on the track one hundred or two hundred feet ahead of him, and whistled for brakes and reversed his engine. It is probable that at that time he had already passed the relief train

and a portion of the stalled passenger train. At any rate, the men who were near the north end of the stalled train heard no whistle until after the train had passed them, but they all escaped; while the men who were killed were near the south end of the stalled train, and the whistle must have been sounded before the engine reached them.

The wind was so strong and the flying snow so blinding at the time when train No. 12 reached the cut, that although roadmaster Patch and section masters Lunn and Brewer were on the alert watching for it, they did not hear its approach and did not catch a sight of it until it was within about one hundred feet from them, when they shouted to their men to clear the track. Section master Bartlett was standing near the south end of the line of men, about twenty men being south of him. He caught sight of the engine when it was about one hundred feet from him, and at the same time heard the whistle. He shouted as loud as he could, and got out of the way. The men who were killed were all farther south than he was, and probably within one hundred feet of him. They were all inexperienced men, three of them never having worked on the railroad until the day before, and the fourth having been employed only for a short time on a gravel train in the summer. The cold was so intense that the men had their ears muffled, and with thick clothes on, and numb with the cold, could not move quickly. The roadmaster and section masters all appreciated that it was their duty to look after the men and notify them in regard to approaching trains, and they were on the watch, as was shown by their discovery of the train as quickly as they did. Roadmaster Patch also testified, that, appreciating that there was unusual danger, he had gone down the whole line and cautioned every man that he must be on the sharp lookout for approaching trains coming from either direction. There is no rule of the road defining the responsibility of the section masters for the safety of their employees. It is not customary for a section master having men at work on the track to send flagmen out to notify approaching trains to reduce speed, and it would be an unreasonable delay of business if such a course were generally adopted. The circumstances in this case, however, were exceptional, and called for unusual precautions. The roadmaster and section masters supposed that by a careful watch they could protect their men, but the event proved their error. It seems probable from the evidence that the wind at the time of the accident came in a great gust which was hardly equalled at any other time during the day.

After the accident occurred, roadmaster Patch realized that the precautions which he had taken were not sufficient, and he went to Holyoke and telegraphed to the superintendent of the road to notify all trains to blow long whistles through the cut, and go as slow as it

was safe to go to avoid stalling. The men were at work all through the day without further accident.

Train No. 12 entered the cut at a speed of about twenty miles an hour. If it had received the notice which was subsequently given, it could probably have gone at a less rate of speed without danger of being stalled, but the men who were killed had all the advantage of notice from whistling which could have been given them under any circumstances, as two or three sharp whistles were undoubtedly sounded at a distance of not more than 250 or less than one hundred feet from them, and they only had to go two or three steps to get into a safe position. They may have been so muffled up that they could not hear, or they may have become confused. Roadmaster Patch has been in the employment of the road for thirty-five years, and for nineteen years has been roadmaster. He and the section masters are intelligent men, and the accident is not due to any shirking on their part. They did all that they thought necessary. In the cold and the blowing, in the struggle to gain the mastery over the drifting snow, they did not fully realize how far the several extraordinary elements in the situation could by combination increase the danger. The accident was due to error of judgment in dealing with a case involving unusual, if not unprecedented, conditions.

This accident, and various accidents which have happened during the past winter, suggest that it would be well for the superintendents of the respective roads at the beginning of the winter season to issue a notice to the employees instructing them as to the special precautions necessary to guard against the dangers consequent upon snow-storms, excessive cold and freshets.

For the Board,

GEORGE G. CROCKER,
Chairman.

Feb. 18, 1888.

FATAL ACCIDENT TO MRS. W. H. ESTEY, AT THE WALNUT STREET CROSSING IN NEWTONVILLE, ON THE 2D OF MAY, 1888.

Hearing, 11th of May, 1888.

The Newtonville station is on the south side of the tracks of the Boston & Albany Railroad, and on the east side of Walnut Street, which crosses the tracks at grade. There are four tracks, numbered from the north. Nos. 1 and 2 are used for express passenger and for freight trains, and Nos. 3 and 4 for suburban traffic. The Walnut Street crossing is protected by gates in the ordinary form.

Mrs. Estey, with her little boy, was to take the train which leaves Newtonville for Boston at 7.06 P.M. On arriving at the gate she found that it was closed, and she did what hundreds of people are doing every day at this and the other crossings in the city of Newton, — she passed under the gate and proceeded to cross the tracks. There was a freight train coming out on track No. 1. The train which she was to take was coming in on track No. 4. She was undoubtedly afraid that if she waited for the trains to pass and the gates to be raised she would be delayed so much by the passage of the freight train that she would lose her train. When no trains are passing on the first or second track, a person can wait for the gates to be raised and still have plenty of time to catch the train at the station, but the intervention of trains on the other tracks frequently prevents the raising of the gates and obstructs the tracks until the train has left the station. Mrs. Estey, seeing a freight train approaching on track No. 1, undoubtedly was urged on by the fear that she would lose her train if she waited for the freight to pass.

She hurried across the tracks diagonally towards the station platform. The freight train was near at hand, and so was the passenger train. They met between the crossing and the station. The little boy stopped half way across the tracks and was uninjured, the trains passing on either side of him, but Mrs. Estey, after a moment's hesitation, ran forward toward the station platform, and had nearly crossed No. 4 track when she was struck by the engine of the passenger train, thrown upon the platform of the station and instantly killed.

There is no question that the gates were down, and that she knowingly disregarded the warning and passed under them.

At this Walnut Street crossing, on the north side of the track, it would be possible to erect a gate which, when closed, would effectually bar passage. Mrs. Estey would have been prevented by a solid gate from getting on the tracks, but other dangers connected with the crossing would not thereby be eliminated. On the south side of the track it is impossible to erect any gate or fence which shall give passengers access to the cars without also giving them access to the tracks.

When a train arrives from Boston it is customary for a large proportion of the passengers to cross the tracks in front of the engine, going diagonally to the north side of the Walnut Street crossing, thereby running great risk of being struck by trains on tracks Nos. 1 and 2.

If a solid gate were erected on the north side, people crossing the tracks from the south to the north when the gates are closed might get caught between a train on track No. 1 and the gate, and be

crushed there. The space betwen the track and the gate might be large enough for ten or twenty people to stand in with safety, but not large enough for an unusual crowd of fifty or more.

If the space between tracks Nos. 2 and 3 were increased, and a fence built midway between these two tracks, beginning opposite the east end of the station platform and running west to the street crossing, the danger would be somewhat diminished, since people would then be compelled to cross the tracks at the street; but the only effectual way to deal with the problem is by separating the grades.

The gatekeeper stated that he has occasion to caution people almost every day, and that they are generally indignant with rather than thankful to him therefor. On some occasions the attempt to cross has appeared to him to be so foolhardy that he has interfered with force, and in such cases has aroused considerable antipathy to himself. He stated that his position is one of constant anxiety for the safety of those who persist in defying the notice given by the closed gates and his personal warnings. The experience of the gatemen at the other crossings on the main line in Newton is similar to that of the Walnut Street gatekeeper.

During the day on Saturday, May 19, 1888, and the night following, the gatemen at seven out of the nine street crossings on the main line of the Boston & Albany, in the city of Newton, made a count of the persons who persisted in crossing the tracks after the gates were down. The day was stormy and the schools were not in session: —

	Twenty-four Hours.	7 A.M. to 7 P.M.	7 P.M. to 7 A.M.
Washington Street,	38	30	8
Centre Street (two men operate the gates at this crossing),	391	297	94
Church Street,	1	1	–
Chestnut Street,	148	111	37
Highland Street,	143	118	25
Washington Street, West Newton,	87	56	31
		5 A.M. to 5 P.M.	5 P.M to 10.25 P.M.
Walnut Street,	310	152	158
Totals,	1,118	765	353

The accident is another painful demonstration of the necessity of abolishing this and other grade crossings in Newton on the main line of the Boston & Albany.

Upon the petition of the Newton Street Railway Company for authority to cross the tracks of the Boston & Albany at grade, at this and another crossing in Newton, this Board by its decision, dated Dec. 31, 1887, refused to grant the desired authority, on the ground that a separation of grades was imperatively necessary, and that delay would surely swell the list of victims, while the task would every year become more difficult and more expensive. In its annual report this Board called the attention of the Legislature to the foregoing decision, and recommended that an act be passed requiring a separation of grades at the crossings on the main line in the city of Newton, and used these words: "Grade crossings on single-track roads are dangerous; on double-track roads they should seldom be permitted; on four-track roads, never." "The multiplication of tracks and the increasing number of fast freight and passenger express trains have driven this question of the abolition of grade crossings out of the domain of expediency into the domain of necessity." In accordance with its report, the Board appeared before the committee of the Legislature on Railroads, and urged the passage of an act requiring such separation to be made, leaving the method of doing the work and the apportionment of the expense to be governed by the provisions of law applicable to such cases. The Boston & Albany Railroad, by its counsel, appeared before the committee, fully indorsed the position of the Board that a separation of grades is necessary, favored the passage of the act and signified its entire willingness to bear such portion of the expense as a disinterested commission, appointed under the provisions of the Public Statutes, should deem its just proportion. The company showed that it was prepared to deal with the matter in a large, liberal and progressive manner, with wise foresight, dimmed by no false economy.

The Board regrets that opposition was made to the proposed act, and that it failed to pass.

For the Board,

GEORGE G. CROCKER,
Chairman.

July 3, 1888.

ACCIDENT ON THE OLD COLONY RAILROAD, ON THE 19TH OF JUNE, AT 10 P.M., AT THE COMMERCIAL STREET CROSSING, COMMONLY CALLED REED'S CROSSING, IN EAST WEYMOUTH.

It appeared that the 9.40 P.M. train from Cohasset reached the above-named crossing at about 10 P.M., and there struck a two-seated carriage containing Mr. Nathan Joy and Mr. W. W. Bates, who were returning from Nantasket Beach to their homes in Weymouth. Mr. Joy was instantly killed, and Mr. Bates died at the hospital, in Boston, about 1 A.M. on the following morning.

This crossing, for four or five years, has been protected by gates, but they were not operated after 8 o'clock in the evening. The evidence was conclusive that the whistle was sounded eighty rods from the crossing, and the bell rung in the ordinary way. Persons travelling as Messrs. Joy and Bates were travelling, towards Weymouth, have a good view of the track before reaching the crossing. It seems probable that the unfortunate travellers heard the whistle and thought they could cross the track ahead of the train. Though this is probable, it is possible that these gentlemen, knowing that there were gates at this crossing, trusted entirely to them, and so paid no attention to the sounding of the whistle.

Without doubt the knowledge that there is a gate, or that a flagman is employed at a crossing, increases the danger when the gate is not operated or the flagman is absent.

On previous occasions this Board has called attention to the danger of withdrawing flagmen and gatemen, and leaving crossings unguarded. In the report upon an accident on the Boston & Maine Railroad at Wakefield, embodied in the Annual Report for the year 1887, occurs the following: "It also appears that it was the practice of the railroad managers to withdraw the gateman at 8 P.M., although several regular trains, one of them a full express, run over the road between 8 and 12 P.M. This is an unsafe practice, tending to endanger travellers, especially those who know the existence of a gate at the crossing. To such persons the fact that the gate is not closed is an assurance that no train is due. The upright bar of the gate is a safety signal, and, if it is a false signal, it is a source of danger. . . . The Board has heretofore expressed its views as to the danger resulting from the withdrawal of gatemen or flagmen during the times when trains are running over railroads."

The management of the Old Colony Railroad, appreciating the lesson to be drawn from this accident, has, since the accident, put on extra men for all crossings where trains run frequently during the

night, and such crossings will be guarded for all trains during the twenty-four hours. Other protected crossings, where trains are not run regularly during the late and early hours, will be guarded until all schedule passenger trains for the night have passed.

For the Board,

GEORGE G. CROCKER,
Chairman.

July 3, 1888.

FATAL ACCIDENT CAUSED BY GIVING WAY OF THE PILE STRUCTURE NEAR THE WEST END OF THE FITCHBURG STATION IN THE CITY OF BOSTON, ON THE AFTERNOON OF THE 23D OF JULY, 1888.

It appeared that at about 4.50 P.M. on Monday, the 23d of July, a portion of the pile structure at the north-east end of the passenger station of the Fitchburg Railroad in Boston, which was used for a side track for the storage of cars, gave way under two empty passenger cars, the ends of which fell through into the water, together with some of the flooring of a car-shed adjoining. In this car-shed passenger brakeman A. C. Morris was standing at the time of the accident, was carried down with the wreck into the water and was drowned. No other personal injuries were done.

On the Thursday preceding, being the 19th of July, Mr. George F. Foye, station agent, noticed a depression of the track in question for a distance of between forty and fifty feet at the point where the accident happened, the settling amounting to from three to six inches. He immediately caused a red flag to be placed in front of the settled portion, and gave notice which resulted in an examination being made by Mr. Thomas Finnell, section foreman for the Charlestown and Boston yards, and by Mr. Andrew B. Hubbard, foreman of carpenters.

On the next morning, by Mr. Finnell's order, his men began to strip off the dirt which covers the pile structure to the depth of about two and one-half feet. This dirt was placed in front of the weak spot in the track, and when the workmen had got about down to the clay, they were notified by Mr. Hubbard, who in the meantime had made a partial examination of the piles and woodwork underneath, that they need do no more. What Mr. Hubbard found, what he caused to be done, and a general discussion of the character of the pile structure, will be found in the report of Prof. George F. Swain, the bridge expert of this Board, hereto appended.

Mr. Hubbard's men continued their work repairing and strengthening the structure when the tide would permit them to do so, and on Monday morning Mr. Hubbard told Mr. Finnell to have the dirt put back and the track put down, and Mr. Finnell understood Mr. Hubbard to say that everything was all right underneath. Mr. Hubbard, however, testified that he told Mr. Finnell to put back the dirt and rails so that the roadway might be ready when the work was completed underneath. The dirt was put back and the rails relaid about noon, though some tamping was done after the men returned from dinner. None of the witnesses knew who removed the flag.

Thomas H. Hughes, yardmaster, on Monday afternoon, seeing no red flag and seeing that the track had been relaid, and having been told by Mr. Carney, an assistant to the chief trainshifter, that the track was all right, ordered cars to be run in on it. After they were placed upon it, the track gradually sank, and the carpenters, who were at that time working underneath, had sufficient warning of the impending crash to make good their escape, but they had not time to get out from underneath the wharf and warn anybody above.

So far as the premature removal of the flag was concerned, it was due to a loose and indefinite way of giving and receiving orders. Where danger has existed, the signal of danger should not be removed except upon definite order from proper authority; and where misunderstanding is possible, the order should be repeated by the person to whom it is given. Mr. Turner, the chief engineer of the road, or Mr. Hubbard, the foreman of carpenters, if duly authorized by Mr. Turner, was the proper party to make report when the work underneath was completed so as to be safe. Mr. Thomas J. Dicken, the roadmaster, or his section foreman for that section, Mr. Finnell, was the party to whom the report should have been made, and by whose order the danger signal should have been removed. The report was, in fact, either inaccurately made by Mr. Hubbard, or incorrectly understood by Mr. Finnell; and the danger signal was removed by somebody without any definite order from Mr. Finnell having been given, though his understanding of the condition of affairs was such that the order would undoubtedly have been given by him had he been applied to.

This accident, like many others, shows that there is room for great improvement in the accuracy of transmitting orders, and in a more definite determination of the extent of the powers and duties of the respective officials; and the general managers of the various roads are earnestly recommended to make a careful study of their working organization, to find, in the first place, whether they can themselves accurately define the limits of the powers and duties of their various subordinate officials, and, in the second place, to learn whether such

officials correctly understand the scope of their respective powers and duties.

The accident raised a doubt as to the condition of the pile structures on this and other roads, and this report has been delayed to enable an investigation to be made in regard to the same. From the full and careful report of Professor Swain, made to this Board and appended hereto, it appears that the investigation was much needed, and that the inspections of piles below low-water mark by divers have not been so general nor so frequent as they should have been.

The Act of 1887 required every railroad corporation, at least once in two years, to have an examination of its bridges and the approaches thereto made by a competent and experienced engineer, and to forward to this Board a copy of his report, giving the results of his examinations, conclusions and recommendations.

The first reports from the respective corporations have been received, and it now appears that in some cases the engineers have reported pile structures safe without a complete knowledge as to their condition.

This accident and investigation have emphasized the importance of having a careful inspection of piles below low-water mark made by divers, as a prerequisite to the engineer's biennial report.

For the Board,

GEORGE G. CROCKER,
Chairman.

Dec. 7, 1888.

Boston, Nov. 25, 1888.

The Massachusetts Board of Railroad Commissioners, Hon. George G. Crocker, *Chairman.*

Gentlemen: — I beg leave to submit to you the following report regarding the accident which occurred at the Fitchburg depot on the afternoon of Monday, July 23 last, due to the giving way of a portion of the pile bridge supporting the tracks, and by which one man lost his life. This report is limited to the engineering matters in connection with the accident, and to the consideration of pile structures in general, with reference to their safety and their liability to deterioration or decay.

I need not here refer to the well-known details in connection with the occurrence of the accident. Suffice it to say that a portion of the bridge beneath the track known as No. 4 had, several days previously shown signs of weakness by a settling of the track of three or four inches. It had been examined, the track had been raised, and

men had been put to work strengthening the pile substructure. The examination of this substructure had been confined to the portion above low water, no examination of the lower portions of the piles having been made. It had been found that one of the caps or girders by which the piles in one bent or row are tied together had settled several inches, and it was supposed that some of the piles beneath were weak, or that the load was not well distributed over them. To remedy the defect it was proposed to strengthen that bent of piles by adding two new girders beneath the old ones, one on each side, each seven by fourteen inches, and thirty-six feet long, cutting out shoulders on the piles to support them, and fastening them by bolts. Wedges were afterwards to be inserted between the new and old girders, thus throwing the load partly on the former, and, by means of them, distributing it over the piles. These new girders were to reach over about seven piles, some on one side and some on the other of a joint in the old girders above them, and they would, therefore, undoubtedly serve to distribute the load better than before. Only one bent of piles was to be so repaired, the others showing no settling, and apparently not needing attention.

The girders had been procured and were being put in place by the carpenters when the accident took place, the men beneath the bridge barely escaping with their lives. Shoulders had been cut in the piles to receive the new girders, which were in place and fastened partly by permanent bolts and partly by clamp-screws, although most of the bolts had not up to that time been put in. The new girders, furthermore, had not been fully wedged up to the old ones. It was while in this condition that the cars were, by some misunderstanding or carelessness, run upon the track, causing the downfall of the structure. It does not clearly appear from the evidence whether the structure had been weakened or strengthened by the repairs which had been made. It appears probable, however, that its strength had not been materially altered, and that its immediate failure was due to running the cars upon it before the repairs were completed and it was in condition to receive them. Whether the work which was in progress would have sufficed to render the bridge able to carry loads to which it would naturally be subjected, cannot be stated, but it is clear, from what has since been discovered, that the substructure was in a defective condition; and while the said repairs, if completed, might have prevented or postponed the disaster, much more was necessary to render the structure satisfactory. It appears, however, that the foreman in charge of the repairs had concluded that the proposed girders would not be sufficient, and that he intended to add still

other girders lower down on the piles, extending farther on each side, and thus still more distributing the load.

It may be recalled here that the track under which the failure occurred was not used to start trains from, but was simply a side track for empty cars or trains which had been made up and were ready to leave.

At and near the point where the failure occurred, the bridge is very irregular in construction. That portion under the main tracks was built about the year 1854, and consists of oak piles supporting a top of hard pine, generally with white pine flooring. The portion that gave way is also stated, by Mr. Turner, to have been built about the year 1854, and to have been a triangular piece between the old Beverly Street or Warren bridge and the main track bridge. It was built by the railroad company, and was not sufficiently connected with the structures on either side. Within a short distance of the scene of the accident there were, therefore, three structures different in construction and date of erection; and the arrangement of piles and stringers was, therefore, very irregular under the whole of the area beneath the end of track No. 4, as well as the sheds lying between it and the present Warren bridge. It is probable that some parts of this structure were portions of the original bridge which was built in 1828. It may be stated here that the piles in the greater portion of this old bridge remained until four years ago, when they were taken out and the Warren bridge rebuilt by the city.

On account of this irregularity, it is probable that the weight to be carried was not at all uniformly distributed over the piles, but that some were loaded considerably more than others, and considerably more than they should have been.

With regard to the construction of the bridge, it may be said, in general terms, that the stringers — which extended from bent to bent of piles, resting on the girder caps already referred to, and generally, though not in every case, supported by piles directly beneath these points of support — were covered by a close flooring of six by six inch white pine, carrying a covering of gravel and clay generally nearly three feet thick, upon which the tracks were laid. The dead load to be carried was therefore very large, amounting, probably, to at least four hundred pounds per square foot, and perhaps more when the earth covering was saturated with moisture. This alone would bring a load of over twelve tons — and probably in some cases fully fifteen — on some of the piles;* and a train even of empty passenger cars would increase the load per pile by several tons more. The safe load for

* Compare Mr. Turner's statement on p. 219.

these piles cannot be exactly stated, but it may be confidently asserted that the load put upon some of them was much in excess of what they could safely be assumed to carry, this excess being principally on account of the large dead load due to the gravel filling.

Previous to the accident the precise condition of the bridge was not very well known, and, in fact, this pile structure appears to have been much less carefully inspected than the other bridges on the line. Mr. Turner states that he always examined it twice a year, and that he was under it last April and noticed nothing defective. It is also stated that the bridge was examined every week by one of the bridge foremen or carpenters. These examinations, however, had been confined exclusively to those parts which are above low water, and nothing whatever seems to have been known regarding the parts below this level. The piles under the main tracks west of the draw are nearly all of white oak, and were examined by a diver last fall. With two exceptions they were found in perfect condition, and this probably led to the inference that those east of the draw, or near the station, were in equally good condition, although no actual examination of them had ever been made. Mr. Turner stated that the regular inspections referred to had shown the timber of piles, caps, bolsters, stringers, etc., to be generally in sound condition above low water, and that this result has been confirmed by the inspection made since the disaster. With regard to the portion below low water, however, the examination which has recently been made has shown that the previous inspections had been insufficient, that some of the piles were in a dangerous condition and not capable of bearing any load, and that sufficient importance had not been attached to the observed settling of the track. In accordance with the circular letter of the Board, every pile in the portion of the bridge east of the draw has, during the past few months, been thoroughly examined by a diver, and the results of his examination are given in the report of Mr. Turner, hereto appended. Briefly stated, ten piles under the main tracks were found broken or sprung, five of which had already been reinforced by additional piles beside them and connected to others, leaving five which had not been reinforced or strengthened. In the bent which gave way under track No. 4, at least one broken pile was found, the greater portion of the break or fault being old. In the bent just north of the one which gave way, and directly under track No. 4, one oak pile was found which may have been defective originally, but which at any rate had been entirely eaten off by marine animals. Under the former car-sheds and driveway a number of birch piles and one oak pile which were originally a part of the old Beverly Street bridge were also found entirely eaten off just above the bed of the river. Portions of these piles are shown



FIG. 1.

in the illustration, Fig. 1.* None of the piles driven in 1854 have been found worm-eaten, although some of them are broken.

The stringers, girders and white pine covering, as well as the upper parts of the piles, under the main tracks, are reported to have been found in good condition. The covering under the tracks which gave way showed some decay, but not a great amount. Mr. Turner reports that the portion of the covering under the coal tracks and the west end of driveway between No. 1 and No. 2 freight houses is of round spruce logs, and poor. Some of the covering under the southerly tracks this side (east) of the draw is also of these round logs.

A consideration of the facts which have been adduced leads to the following conclusions: —

1. The accident was due primarily to the giving way of the piles forming the substructure of the bridge.

2. This yielding was due to the defective condition of the piles, one being entirely eaten off, and at least one other partly broken. This broken pile appears to have settled, causing the settlement of the track, and before the proper repairs had been completed the extra weight of the cars run on to the track caused the final giving way.

3. The disaster was hastened by the fact that the covering of earth and clay, saturated with moisture, was such as to load the piles beyond their proper limit, and that the portion which yielded was not very well connected with the rest of the structure.

4. The cause of the old break in the pile cannot be stated. It may possibly have been injured in the driving, or it may have been originally defective; and it probably had been waiting for years for the precise combination of circumstances necessary to cause it to give way.

5. The defects in the piles, which were the primary cause of the accident, would have been discovered by an examination with the help of a diver.

Since the date of the accident, the Fitchburg Railroad Company has been engaged continuously in rebuilding all that portion of the bridge under track No. 4 and the old car house. The old piles have been removed, new ones driven, and an entire new top put on without any covering of earth, thus reducing the load to be carried, and ren-

* In Figure 1, Nos. 1 and 2 represent portions of birch piles from the Fitchburg bridge, under car house, both eaten off completely by the Limnoria; No. 3, portion of another pile from same place, also eaten off and attacked over a considerable length; Nos. 4 and 5, portions of the same oak pile from Fitchburg bridge, under track No. 4, eaten by Limnoria, but also probably defective. This pile was in the bent next to the one which gave way, and is the pile which was examined by the diver a few days after the accident, and which he reported as entirely eaten off. The small piece under No. 1 is the piece which he brought up from this pile (Nos. 4 and 5), and contains one large teredo hole with shelly lining.

dering this part of the structure easy of access for inspection. Six new piles have also been driven under the main tracks east of the draw, and work has been also going on in the rebuilding of the portion west of the draw. In the report of Mr. Turner, hereto appended, certain recommendations are made regarding the rebuilding and repairing of the remainder of the structure. I earnestly recommend that his advice be followed, for the present condition of the structure is not at all satisfactory, and the removal of the earth covering, the strengthening of the pile substructure and the replacement of the top, are necessary in order to bring it up to the proper standard and render it sufficiently safe. Reference has already been made (page 213) to the large load brought upon some of the piles by the earth covering, and as Mr. Turner states the said covering to be from two to even four feet deep, it is very possible that some of the piles under the main tracks may be loaded even in excess of the figures there given, when the tracks above them are covered by heavy engines. The piles are on the average twelve to fifteen inches in diameter at the butts, placed at distances apart ranging from a few inches up to six feet, and perhaps in some cases even more, and averaging perhaps five feet, and their lengths down to the bottom of the river are about thirty-five feet at the deepest place. The bottom, according to Mr. Turner's statement, is hard clay overlaid with some mud, in which the piles are driven ten feet, or thereabouts. While the carrying capacity of the piles cannot be exactly determined, it is probable that the safe load on one pile should not exceed twelve tons, so that some of these piles are undoubtedly much overloaded. Many of them have settled from their original positions, carrying, of course, the stringers with them, and giving the bridge, as seen from below, a decidedly bad appearance, especially on the south side.

The stringers under the main tracks, east of the draw, are irregular in arrangement and construction. They consist generally of two timbers, either twelve by twelve or twelve by fourteen inches, bolted together at ends and centre of each span, and generally running over two spans of from fourteen to twenty feet centre to centre. There are generally bolsters between the stringers and the caps, the stringers and bolsters being bolted together. No computation of the strength of these stringers is possible, in view of their very irregular arrangement, the uncertainty as to the distribution of the load by the earth covering, and especially on account of the settling of the piles and the consequent bending of the stringers, whereby — since they are continuous over two spans — their condition as to strength is materially affected. While they are reported to be generally sound, I have, nevertheless, noticed,

in a hasty examination of the portion on the east side of the draw, towards the south side of the bridge, some which were poor and some which were broken. This portion of the bridge is certainly in bad condition, and needs attention without delay, and I should advise that heavy loads be kept off the tracks on the said south side. It was on this side that a settling was noticed some years ago, very similar in its cause, apparently, to that which occurred in track No. 4 just before the accident.

Before proceeding to discuss the general question of pile structures, or giving the results of the recent examinations which have been made of the other pile bridges in the State, I would call your attention here to the following facts with regard to the manner in which the Fitchburg Railroad Company had complied with the statute providing for the inspection of railroad bridges, and with the requirements of your Board for plans and information regarding its bridge structures. Section 1, chapter 334 of the Acts of 1887, reads as follows: —

> Every railroad corporation shall, when requested by the Railroad Commissioners, and at least once in two years, have an examination of its bridges and the approaches thereto made by a competent and experienced engineer, who shall report to the corporation the results of his examinations, his conclusions and recommendations, and the corporation shall forthwith transmit a copy of the report to the Board of Railroad Commissioners. The first report shall be made and transmitted to the Board not later than the first day of November in the year eighteen hundred and eighty-seven, and subsequent reports shall be made and transmitted at intervals of not more than two years. When a railroad corporation builds a new bridge it shall forthwith have a report in like manner made and transmitted to the Board. The reports shall furnish such information in such detail and with such drawings or prints as may be in writing requested by the Board of Railroad Commissioners.

In accordance with this statute, your Board issued to the railroad companies in June, 1887, a circular calling for said report of inspection, and for detailed plans, strain sheets, and other information, with regard to every bridge of over ten feet opening in the clear between abutments. The intention of this circular was to cover every opening of ten feet under the track, whether crossed by means of a trussed bridge, by stringers, by piling, or by trestle work. The Fitchburg Railroad responded promptly to the requirements of the Board, and on the date fixed by the statute a report of inspection was received from Mr. Turner, covering the entire line and specifying "all bridges needing repairs or renewal, or on which strains of over ten thousand pounds per square inch were found." The pile bridge over the Charles River was not mentioned in this report, and it was

therefore to be presumed that this structure had been examined and was considered to need no such recommendations. Mr. Turner now states, however, that he did not at that time consider this to be a bridge, but to be a wharf, and that he did not suppose the circular of the Board was intended to cover such structures. Whether he considered at that time, or previously, that this structure was in need of repairs, I am unable to say. Plans of this bridge, for the reason above mentioned, had not been received at this office, but there were still other plans which had not been received, not only from the Fitchburg Railroad Company, but from other companies; and in view of the large amount of labor necessary in the preparation of the plans which you had called for, it was not only justifiable, but in many cases necessary, to allow much more time for their preparation than was at first contemplated. The statute quoted above required simply a report of inspection to be submitted by the first of November, 1887, and the detailed drawings and other information accompanying such report was left to the discretion of the Board. It will therefore be seen that your Board had reason to suppose that this structure had been inspected in accordance with the statute, and found in good condition, and that you had no grounds to distrust its security.

It is to be remembered that the statute does not, as appears to be supposed by some, require that an inspection of each bridge in the Commonwealth shall be made under the immediate direction of the Board, but that such inspection is required to be made by some engineer employed by the railroad company for this purpose, the report to be submitted by him to said company, and a copy transmitted to your Board.

The occurrence of this accident, and the fact that it led to the discovery that some piles under the bridge were broken and that some had been entirely eaten off by marine animals, together with the fact that some of these piles had never been examined below water, naturally raised some doubts as to the condition of the other pile bridges over the Charles River, and of those in other parts of the State. It was feared that the Fitchburg bridge was not the only one which had not been examined by the help of a diver, and that there might be others whose condition was doubtful or even dangerous. Letters were therefore addressed by you to most of the railroad companies in the State, calling their attention to the matter, and requesting from them a detailed statement as to what inspection they had made of their pile structures; and, furthermore, requesting them, in case a thorough inspection below water as well as above had not within a short time been made, to have such an inspection undertaken without delay, and the results reported to your Board. Replies to these communications, and in most cases the results of such examinations,

have now been received, and to these I will call your attention: —

Fitchburg Railroad. The following report of Mr. Turner, which has already been alluded to, gives the results of the inspection carried out under his direction, together with other facts regarding the accident: —

FITCHBURG, MASS., Oct. 6, 1888.

E. B. PHILLIPS, Esq., *President Fitchburg Railroad.*

SIR: — Having made an examination of bridge and wharf belonging to this company, over waters of Charles River, I will report as follows on condition of same.

The piles are nearly all of white oak and are generally in good condition. The diver who examined them found all west of draw-bridge sound and whole, with two exceptions. Those east of draw were not in as good condition, especially those under car house and driveway. Ten piles under main tracks were found broken or sprung; of these, five had previously been provided for by driving additional piles and connecting old with new ones by hard-pine girders. Four new piles in one bent and two in another have since been driven and connected with old work. Under the car house and driveway a number of old piles, which were formerly under Beverly Street and Warren Avenue bridge, were found to be in unsafe condition, having been eaten by small worms just above bottom of river, so that but a small portion of original strength of pile was left. None of the piles driven by the railroad were found injured by worm action, only those in old travel bridge.

The timber and covering under main tracks is in good condition. That portion of covering under coal tracks and west end of driveway between No. 1 and No. 2 freight houses is poor, being round spruce logs in same condition as those recently removed from under main tracks near coal sheds.

The greater part of pile structure was so built that all of the timber would be covered with water at high tide, making it necessary to cover timber with clay and gravel to a depth of two to four feet in order to keep track above high water. This earth covering in itself makes a large load for the pile structure to carry, in some cases as much as ten tons per pile.

I would recommend that all of that portion of pile structure covered with round spruce be at once rebuilt, driving enough new piles to bring load within twelve tons per pile, and so change timber and covering that earth be left off from all portions except driveways, where there should be just enough to hold paving. The other portions of structure, especially under main tracks, should be uncovered and earth removed, rebuilding with timber covering up to grade of track, enough piles driven to reduce weight per pile to twelve tons or less, and double stringers put in wherever single ones are now used, in all spans of twelve feet or upwards.

Consent of Harbor Commissioners has already been obtained to drive what piles are needed to make structure safe. I have estimated that one hundred new piles will be sufficient.

Regarding accident in July at which cars broke through wharf, I will say, that the portion of wharf which broke down was built about 1854, was

a triangular piece between the old Beverly Street or Warren bridge and main track bridge, was built by the railroad company, and was not properly connected with structures on either side. The piles, except one, were in good condition. One pile was defective, a knot or fault of some kind extending two-thirds through it just above river bottom. This pile broke, the top settled, making depression on surface which was noticed by men at work. Track was taken up, some earth removed and carpenters began work under wharf, intending to put heavy girders on bent in which was broken pile, connecting defective pile with good ones on each side, thus distributing load. Before carpenters had completed their work, track was replaced and cars run on track. The weight was too great for the structure in the condition that it then was, and it gave way.

Several elements contributed to cause this accident. First, faults in construction which could not be discovered while the earth covering remained in place. Second, shock of trains against bunter-posts at end of track, which had shaken covering timbers from their bearing. Third, great weight of earth covering, which was increased by rain just before accident. Fourth, loading track before carpenters had completed their work. The primary cause was, of course, the broken pile, but I do not think this alone, without some or all of the circumstances noted above, would have caused the accident.

I have seen nothing thus far to justify the fears expressed at the time of accident, that the pile structures belonging to this road have become weakened by action of worms in the piles.

Yours truly,

E. K. Turner, *Chief Engineer.*

Old Colony Railroad. This company at once ordered a thorough examination of the principal pile bridges on its line, leaving out those which are comparatively new. The report of Mr. Morrill states that, with the exception of the bridge over the Taunton River at Somerset, all of the bridges examined were found in perfect condition under water, and that not a sign of the action of marine animals was observed. The bridge at Somerset and one other in that neighborhood are exposed, as will hereafter be explained, to the ravages of the teredo, a wood-boring animal, and a certain number of piles in this bridge have generally to be replaced each year. Mr. Morrill's report states that twenty-nine piles were found to require renewal this year, nine of these being under main stringers, eleven under side stringers and nine spur piles. These piles are to be driven this fall. The Broad Cove bridge, just north of Somerset, the only other bridge on the Old Colony road which is attacked by these animals, was found to require six new piles. The Old Colony Railroad Company has the Somerset bridge examined annually by a diver, and drives sufficient piles each year to keep it in safe condition.

New York & New England Railroad. The only pile bridges over salt water in this State on the line of this road are the one at Boston depot and that over South Bay. The company had the former bridge thoroughly examined by a diver, and reports every pile in good condition. The bridge over South Bay has not been examined, though it should be.

Boston & Albany Railroad. This company stated that its pile structures, which consist largely of wharves, had never been examined by divers, for the reason that the greater proportion of the piles were entirely exposed at low water of spring tides. At South Boston an inspector examines the piles certainly every month, and during the greater part of the year he examines them every week. In August, 1888, however, a thorough examination by a diver was made of all the pile structures of the company, with the following results : —

The piles under the bridges of the Grand Junction branch were found to be in good condition, the worms having done little or no damage. At our Lehigh Street wharf, on Fort Point Channel, Boston, within an area of about 8,250 square feet, being that portion of the wharf in which the piles are not entirely exposed to view at low water, 122 spruce piles were found badly eaten by the worms. There are other piles in this wharf with sound bottoms, but decayed or split tops. At our wharves in East Boston 282 piles were found which had been attacked by the worms. Of these, thirty-eight are badly eaten. They are located in the several piers as follows : —

	Attacked.	Badly Eaten.
Pier 1,	66	11
Pier 2,	46	15
Pier 3,	8	–
Pier 4,	100	9
Pier 6,	62	3
	282	38

We propose to put our pile structures in safe condition, replacing the defective piles with sound ones; in fact, we are at the present moment at work on our East Boston property repairing one of the wharves.*

Boston & Maine Railroad. Mr. James T. Furber, the General Manager, stated in response to the letter of the Board that he knew of no examination having ever been made by a diver of the Boston & Maine bridges across the Charles River, and that the inspections of his pile bridges had been confined to the parts above water. In August of this year an examination was made by a diver of the piles under the main tracks of the Eastern Division, with the result shown in the following report : —

* The " worms " referred to in this report are the Limnoria, to which reference will be made farther on in this report.

H. Bissell, *Chief Engineer Boston & Maine Railroad.*

Dear Sir: — I have carefully examined the piles in the bridges over Charles and Miller's rivers, at Boston, on main tracks of the Eastern Division of the Boston & Maine Railroad.

Eighty-two and one-half (82½) per cent. of the piles I find quite sound below high water. Four (4) piles were badly eaten, and the balance show slight traces of the work of salt-water worms.

(Signed) John P. Mitchell.

Boston, Sept. 8, 1888.

With regard to the other pile bridges of the Boston & Maine system over the Charles River, Mr. Furber states that the one carrying the Western Division is to be rebuilt at once, while that carrying the Lowell system is now in process of reconstruction, and will be made almost entirely new. No examination, since the issue of the said circular letter of your Board, appears to have been made of them, or of any of the other pile bridges on the Boston & Maine system; but the regular reports of inspection of all of them had previously been received, and these reports indicate no cause for distrust as to the condition of the submerged portions.

Mr. Bissell, Chief Engineer of the Boston & Maine Railroad, states that three or four years ago he had all the other pile bridges on the Eastern Division, with, perhaps, one exception, examined by a diver. The result was that some, such as that at Beverly, were found quite badly eaten, and were repaired at the time.

Boston, Revere Beach & Lynn Railroad. This company reports that all the pile structures on its line were thoroughly examined by a diver in April, 1887. The result of this examination showed that most of the piles were sound, but that a few were defective, and these were soon after removed or reinforced. The piles on the line of this road are subject, to a considerable extent, to the attacks of wood-boring animals, and spruce piles are eaten so as to be in a dangerous condition usually in from five to six years. A large proportion of the pile bridging on this line is over flats, which are dry at low water. In these places no trouble with "worms" is experienced, and spruce piles are used, which are found to last under water as long as the tops will last. In places not bare at low water the old spruce piles are now being replaced as fast as necessary by oak ones, which are much less subject to the attacks of "worms," although experience does not enable a statement to be made as to the length of time that such piles will last. The company reports that, during this fall, it was the intention to replace from one hundred to two hundred piles, partly on account of the old ones being eaten by "worms," but principally because of decay at the heads.

While the results of the examinations which have recently been made have shown in some instances that bridges built many years ago, and which had never been examined by a diver below low water, were still in good, or even perfect, condition, yet they have also shown, I think, the importance of a careful submarine examination of such structures at suitable intervals. A careful examination would have shown the piles under the Fitchburg bridge to have been defective, and would have indicated the necessity for repairs which, if carried out, would have prevented the occurrence of the recent accident; and while it appears that the bridges on the Charles River are not seriously exposed at the present time to the ravages of marine animals, it is clear that the inference from this result must not be carried too far, in view of the well-known facts that wood-boring animals require for their growth the existence of particular conditions; that they are not found where the water contains certain impurities; and that, while not found in one locality, they may yet exist within a very short distance thereof. It is doubtless true, in many cases, that if a pile bridge is in a dangerous condition it may be discovered by an examination at extreme low water; but there are exceptions to this rule, and the facts which have been stated show that implicit reliance must not be placed upon such examinations. In my opinion it is a matter of importance that submerged wooden structures in salt water should be examined by divers at stated intervals. Out of sight is recognized to be out of mind, and structures which cannot be seen are apt to be neglected.

As a matter of interest, I may add here some extracts from the report of Mr. Jackson, City Engineer of Boston, on the condition of the city bridges, as shedding some further light on the subject of the life and decay of pile structures, and on the action of marine animals. An examination was made during August and September of this year, pursuant to an order of the Board of Aldermen passed soon after the Fitchburg accident: —

> The piling under portions of eleven bridges has been examined by a diver, to find damage done by the limnoria or pile worm, with substantially negative results; in only two cases was serious damage found, and these were both previously known. The two cases referred to were the draw pier of Broadway bridge and the draw foundation of the Chelsea Street bridge.
>
> The diver also examined the wharves at Deer, Rainsford and Gallop's Islands. Gallop's Island wharf is but slightly affected, Rainsford and Deer Island wharves are both seriously damaged, and should be examined at intervals of one, or at the most of two years, and repairs made when found necessary. No repairs on account of damage from this source are required at present; both these wharves have been once rebuilt because of the destruction of their piling by the limnoria. . . .

The draw pier of Broadway bridge (over Fort Point Channel) was built of spruce sheet piling; this was at once attacked by worms, and it has been known for many years that it would eventually become so weakened as to become useless.

The removal of the sewage from the South Bay, by clearing the water, has increased the activity of the limnoria. . . .

The piling of the Charles River bridge (from Boston to Charlestown)* has been carefully examined below low-water mark by a diver, and a few piles were found to have been slightly damaged by the limnoria,—not more than six or eight being discovered out of seven hundred examined, and no case of serious weakness was found. . . .

The draw and draw foundations of Chelsea Street bridge (from East Boston to Chelsea) are in bad condition, being old and decayed, and the piling of the foundation has been seriously injured by the limnoria. (The pile structure was built in 1873 and the draw in 1868.)

The piling of Congress Street bridge, built in 1874–75, was found to be only slightly damaged by worms, though some piles have been renewed on account of decay above the water line. The piles of Dover Street bridge were found in good condition below low water. The same was true of Malden bridge (from Charlestown to Everett), and Meridian Street bridge (from East Boston to Chelsea). The piles of Winthrop bridge (from Breed's Island to Winthrop) were found badly weakened by the limnoria. This bridge was built in 1839, rebuilt in 1851, and extensively repaired in 1870. In 1887, eighteen new piles were driven. The piles under the draw of Chelsea bridge, driven in 1873, were examined by a diver and found in good condition. The piles of Canal bridge (from Boston to Cambridge), some of which date from the year 1808, were found in good condition below low water.

As the subject of this report has brought prominently to the attention of the public the question of the strength and safety of pile structures, and their liability to decay and to the action of marine animals, I may devote some space here to a consideration of these matters.

Pile structures are of very extensive occurrence in this State, as well as elsewhere, there being 141 pile bridges on the railroads of this Commonwealth, with a total length of very nearly ten miles. They are used sometimes from motives of economy, sometimes almost from necessity. Where marshes or bodies of shallow water are to be crossed and large openings are not necessary, a pile structure is in place; it being better and cheaper to support the weight to be carried at a large number of points than to concentrate it at a comparatively few points. In cases where a long extent of marsh has to be crossed,

* The original bridge was built in 1785–86, and the present structure, with exception of the draw, in 1854–55.

perhaps with the track very near the ground or the water, or in passing over alluvial grounds subject to overflow, and which it is not practicable to fill in, a pile bridge is a suitable structure. It is, of course, not applicable in great depths of water, or where the interests of navigation require large openings. Frequently a pile structure is used purely from motives of economy, in cases where an iron bridge could equally well be built; a pile structure being, in general, very much cheaper in first cost than one of iron or of stone. In construction it is extremely simple, consisting simply of rows or bents of piles across the tracks, capped on top, and if necessary tied or braced diagonally, upon which rest the stringers which support the floor, and which reach from bent to bent or more frequently span two or three openings.

Such a structure, if properly built, is very satisfactory. It is easy of inspection above water, and even below water with the aid of a diver; its strength may easily be made sufficient beyond a doubt, and it may with ease be strengthened or reinforced. Further, the number and attachment of its parts are generally or frequently such that the failure of one does not necessarily entail the destruction of the entire structure, as would be the case with many truss bridges. A pile may be eaten entirely off, and yet the girders may be, and should be, sufficient to transmit the load to the piles adjacent; if two sticks of timber are placed under each rail one of these may be defective or even worthless, and the other still carry the load till a new one can be inserted. Although the first cost of such a structure is less than that of a stone or an iron bridge, its cost for maintenance and renewal, like that of all wooden structures, is relatively large. The timber decays, or is eaten by marine animals; the piles decay at the tops, or are worn and injured by ice or in other ways; and repairs have to be continually made after the structure has attained a certain age.

As to the strength of such a structure, it is determined by that of the stringers or that of the piles. The stringers may be easily computed by ordinary rules, and practice with regard to them is tolerably well defined. The girders or caps simply serve to equalize the loads on the different piles, and are not generally subjects for calculations, since a stringer is generally supported by a pile directly beneath it; they should be, however, sufficiently strong in most cases, as has already been explained, to allow of the complete failure of a pile without a collapse of the structure. The strength of the piles themselves is the most uncertain element in the structure, since it depends principally upon the character of the foundation. If the piles are long enough to reach a firm stratum, they may support the imposed loads by acting as columns exposed to crushing, and their strength

will be limited by the crushing strength of the timber. In many cases, however, a sufficiently firm stratum is not reached, and the piles are supported simply by the friction against them, which, of course, is dependent upon the character of the ground, and not only differs for each kind of earth, but is moreover liable in some cases to alter from day to day. The crushing strength of the piles is generally very much larger than the loads imposed; for instance, taking the bents fourteen feet apart, and using a heavy consolidation engine, with only one pile supporting each stringer, the heaviest load coming on a pile will not be more than about thirty-six thousand pounds, or eighteen tons. Assuming a twelve or fourteen inch oak pile (this material being generally used for important structures), say twenty feet long, the load required to crush it would probably not be less than three hundred thousand pounds, or about nine times the maximum load to which it is exposed. The strength of a spruce or chestnut pile would probably be not very different, and since there is a large variation in the strength of different specimens of the same material, it would be very possible to find a spruce pile considerably stronger than an oak pile of the same dimensions. It will therefore be evident that the crushing strength of a sound pile of oak, or even of spruce or chestnut, is much in excess of any load which can be brought upon it by a train of cars, and allows a large margin of safety. There is, moreover, a wide variation in a load which a pile will bear acting as a column, due to differences in material and in the conditions under which it is placed with regard to lateral support, etc. But in the case where a pile is supported by the friction on its surface, the load which it can sustain is very uncertain, and a very much greater variation exists than in the case of a column, owing to the differences between different foundations. In such cases the sustaining power of the pile must be known from previous experience in the same or a similar locality, or some rule must be made use of based upon a close observation of the behavior of the pile during driving, and of the amount which it yields at each (and particularly at the last) blow of the hammer. It is also important to possess as complete a knowledge as possible of the physical character of the substrata.

The durability of a pile structure will, of course, depend largely upon the conditions to which it is subjected. If wood is completely and permanently submerged it will last for ages, and may be called practically indestructible, unless eaten by marine animals. It will also last for a long time, even if above low tide, yet not far enough but that it is always wet. Specimens are exhibited of a wooden pile from the remains of the bridge (destroyed by fire) which was constructed by Charlemagne across the Rhine, at Mayence; of pieces of

piles from the foundations of the bridge across the Medway, at Rochester, which was destroyed by Simon De Montfort in 1264, and which was probably then about one hundred years old; also, from the new bridge erected to replace the former one in 1283.

When wood is constantly dry, with a good circulation of air about, it will also last for a very long time. When, however, it is alternately wet and dry, it decays very rapidly. Aside from the question of marine animals, the least durable part of a pile structure will be the part above low water, and decay is certain to take place here sooner or later. Such decay will, of course, first affect the sap wood, and will show itself near the ends of sticks where the moisture can penetrate, or, in other words, at the heads of the piles, where the parts of the bridge are framed together. When this decay has progressed sufficiently far to require attention, it is often necessary to renew the stringers and girders, and sometimes to cut off the heads of the piles, put on new girders lower down, and insert bolsters between the new girders and the stringers. In this way the length of the piles is diminished, and, if carried too far, an element of danger is introduced; namely, a series of bolsters, forming a blocking of considerable height, between the stringers and the piles, rendering the structure more uncertain and less stable.

As a means of preventing the decay of the top of a pile structure, all or nearly all of the woodwork is sometimes placed so low that it will be submerged at high water. This was the case with the Fitchburg bridge. This method of construction may, and doubtless does, increase the life of the girders, bolsters, and perhaps of the stringers; the covering of earth, moreover, serves to distribute the concentrated loads of a locomotive or train much more equally over the piles, and thus reduces, in some cases, to a considerable extent, the maximum moving load on each pile. But it has disadvantages which entirely outweigh these advantages; namely, that the weight on the piles due to this earth covering itself is very large, so that the total weight on a pile is apt to be much larger than by the usual method of construction; moreover, the inspection is rendered less easy and the entire floor less accessible.

Under ordinary circumstances, when there is no trouble with marine animals, a well-built pile structure requires little or no attention for from five to ten years, and perhaps longer, and it should not be necessary to entirely rebuild it for perhaps twenty years. In some cases, indeed, the life of the substructure may be very much longer than this. Mention has already been made of the fact that the old Beverly Street or Warren bridge, in this city, was built in 1828, and was not entirely rebuilt until 1884; also of the fact that the structure which carries the main tracks of the Fitchburg Railroad

was built in 1854. On the other hand, pile bridges may be mentioned which it has been necessary to entirely rebuild within fifteen or twenty years of the date of their original construction. It will therefore be seen that the life of such structures is variable; but, for general purposes, it will not be very far wrong to say that the substructure of a good pile bridge should last at least twenty years, if properly taken care of, while in some cases it may last for a very much longer time. The stringers and top may have to be entirely renewed within ten years.

It should also be stated, in connection with the life and decay of wooden structures, that much depends upon quality and condition of the timber at the time when it is used, upon the time of year when it was felled, and upon the margin of safety originally allowed; and, further, that in streams or tidal waters the running ice is sometimes severe on piles, adding its effects to decay and to the ravages of marine animals.

With regard to these last, an account in some detail will perhaps be in place, in view of the general interest in such matters which has been aroused by the Fitchburg accident. There are two species of marine animals with which the engineer has to contend in the preservation of all submerged woodwork in sea waters. They are known as the teredo and the limnoria.

The teredo, although worm-like in appearance, is neither a worm nor a bug. It is a mollusk or shell-fish, belonging to the same class as mussels and oysters, and being very closely allied to the common clam. It produces its young in the spring, and at one stage in their growth the embryos can swim. It is stated that they appear in the Gulf of Mexico in March, although they are not abundant until May, while in colder waters they are probably later still in making their appearance. These young teredos, not larger than the head of a pin, locate on wood, and immediately commence boring into it. The animal enters the wood at right angles to the surface, or somewhat obliquely, the holes being very small; and after penetrating a short distance below the surface (in case it has entered the timber at the side and across the grain) the animal turns, unless prevented by some obstruction or by other teredo tubes, and commences to work along the grain, either up or down. It excavates a circular hole, which it lines with a shelly material. It does not bore for food, but simply for a home, and it grows as it excavates, filling the hole and remaining in contact with the water at the orifice through which it entered. It grows very rapidly, especially under favorable circumstances, apparently attaining maturity in one season. The animal is sometimes ten inches or more in length and one-quarter inch in diameter, although generally the dimensions are not over one-half of

these. Much larger specimens have, however, been found, even as long as twenty-three inches in the Gulf of Mexico, while statements are on record of teredos one inch in diameter and four feet long having been taken from ships. There appears to be some difference of opinion as to whether the animal lives through the winter, some writers considering that it lives only during one season, while others assert that it hibernates in the wood. It is probable, however, that this depends somewhat on the temperature and other characteristics of the water in which it exists. In cold waters it probably dies in winter, while there seems to be no reason why in the tropics it should not live the year round. There is evidence, at any rate, that on the Gulf coast of Texas the animal works the year round, while at Norfolk it is said that there are no traces of it before June 20, nor any evidence of its beginning to work after September 29.

In excavating its tube the teredo never crosses the tube of another animal or interferes with it in any way. It does not necessarily follow along the grain, but can and does go in any direction, the tube being often crooked and tortuous, and there being always a thin layer of wood between adjoining tubes. Timber attacked by the teredo often becomes completely honeycombed, and may be in this condition while presenting outwardly a comparatively sound appearance; generally, however, and particularly in the harder woods, into which the teredo does not penetrate very far, and in which the part near the surface is likely to be completely honeycombed while the centre is not much affected, the pile wears away on the outside, and the thin partitions of wood are broken by waves or by floating bodies, so that the condition of the timber can be seen by an outside inspection.

All kinds of native woods are attacked by the teredo, from the softest pine to the hardest oak; and, although the animal usually turns so as to avoid knots, yet it can and does penetrate the hardest knots in oak. The rapidity with which timber is destroyed depends, of course, on the numbers and activity of the animal. In tropical waters, where it is abundant, it can completely destroy small timber in four or five months, and even the largest piles in two or three years. Verrill states, in his "Invertebrata of Southern New England," that formerly, when not taken up, the cedar buoys at Wood's Holl would not last over two years, principally on account of the work of the teredo. In the Gulf of Mexico some piles, fourteen to twenty inches in diameter, for a railroad bridge, driven in the spring, were eaten so that they broke off in the following November; and others, driven in June and July, commenced to break in the following winter. Heavy yellow pine piles were so destroyed in a few months that a man could break them off, though many exceeded

eighteen and twenty inches in diameter. It seems, therefore, that from three to five months is sufficient to honeycomb a piece of timber of almost any size in those waters. In Delaware Bay, near the Capes, it is stated that a pile is practically destroyed in about three years, though this must, of course, vary with the material.

Of the general class of teredos there are several species, differing physiologically, as well as in shape and size. To enter into a description of these different species is not here necessary. Of all the teredo tribe, however, the most abundant species on our coasts is the "Teredo Navalis," which is found along the entire Pacific coast of the United States, and along the Atlantic coast from Florida to Vineyard Sound; and this species is the one always referred to when the animal is mentioned. It is the same that has attracted so much attention in Europe, and it has been particularly studied in Holland on account of the great damage it has done, at times even threatening an inundation of the country by destroying the woodwork of the dikes. In Europe it is found from Sweden to Sicily, and it also occurs in Algeria, the Black Sea, and in other parts of the world.

It seems to be necessary for the existence of the teredo that the water should have a certain temperature and a certain degree of saltness. In warm and salt tropical waters it is most abundant, and it decreases in numbers and activity toward colder regions. In the Gulf of Mexico, as already stated, it is very destructive, and it abounds all along our Atlantic coast as far as Vineyard Sound, being still very numerous on the southern coast of New England. It does not appear, however, that the animal ever comes north of Cape Cod, the water being probably too cold. The animal thrives best in clear, salt water, and avoids waters which are brackish or contaminated with sewage or other refuse; yet this rule is subject to frequent exceptions, and the teredo has been found in harbors where the waters were quite brackish, as well as quite impure and muddy. The animal cannot live if the wood in which it exists is taken out of the water; under these circumstances, it is said to die in twenty-four hours. It is further said that if taken out of the wood, but kept in sea water, it will not survive more than three or four days. It is still further stated that it cannot live in stagnant water. As illustrating the requirements of the animal in the way of salt water, it has been stated that it used to be the practice with the boats running between New York and Amboy, when the teredo was found at work on one of them, to take it into the stream towards New Brunswick, where the water is fresh, and where in from twelve to twenty-four hours the worms were killed by the fresh water. On the other hand, Mr. J. W. Putnam, who has had much experience with the animal in the

Gulf of Mexico, does not think clear fresh water necessarily destructive to it. He states that he has not only known it to be healthy and vigorous in waters which were fresh enough for drinking purposes, but that he has reliable information that vessels have been taken up the Mississippi River to New Orleans, over one hundred miles, during a low stage of the water, and tied up for the purpose of killing the worms, yet when placed in the dry dock several months afterwards the worms were found to be still healthy. Nevertheless, the balance of evidence appears to be that the animal requires for its existence a certain amount of salt and a moderately high temperature, though possibly the real fact may be simply that it does not generally find in fresh water the smaller animals upon which it lives.

The teredo is found for a short distance above low water, although the precise limit in this direction is uncertain. On the other hand, it appears to work to almost any depth, even to forty or fifty feet under some circumstances. Below the bottom, even if mud, it does not generally penetrate, though it has been stated by a good authority that it has been found, to his personal knowledge, eighteen inches below the mud, of course entering from above.

With regard to the animal itself, little need here be said. Even naturalists do not appear to have reached definite conclusions in regard to all its habits and characteristics. It has a long, slender, smooth, whitish body, and is attached to the shelly lining near its lower or outer end. Two retractile siphon tubes generally project out into the water, through one of which the animal receives its nourishment, which passes inward to the other end of the body and then back, to be discharged, together with the particles of wood excavated, through the other tube. At the other end are the shell or shells, and what is called the "foot." In regard to the manner in which the teredo bores in wood, there appears to be some difference of opinion, some considering that it is accomplished by the foot, others by the shells. However that may be, the boring is done smoothly and regularly, and the end of a teredo hole looks as smooth as if it had been made with an auger.

Timber which has been seriously injured by the teredo generally shows outward evidence of the fact. Fig. 2 shows some piles taken from our own coast which have been attacked by the animal. When it bores near the outside of the wood, as it is most likely to do in the harder woods, it leaves such a thin partition between it and the outside water that the action of the waves or of floating bodies soon breaks in this barrier, especially after the animal has disappeared; and the pile is thus gradually reduced to a tapering form. In softer woods, the outside of the pile may often appear tolerably sound, as is seen in the case of the spruce pile numbered one in

the figure. Sometimes the teredo, if alive, can be recognized by the projecting tubes, which may be seen.

As already stated, the teredo is not generally found north of Cape Cod. On the southern shore of Massachusetts, along Long Island Sound, Buzzard's Bay and Narragansett Bay, it is abundant, and causes considerable damage to pile structures in those waters. The Old Colony Railroad bridge at Somerset, and others in that neighborhood, are exposed to its ravages, and the means of protection employed will be discussed beyond. It is rather curious, however, that the first piece of wood brought up by the diver from one of the piles of the Fitchburg bridge, although it was a very small piece, showed one large teredo hole with its shelly lining. This is the small unnumbered piece in Fig. 2.* It appears, however, that this animal could not have been a native of these waters, and it is probable that it entered the pile at some other place, and was brought here with the timber. Mr. Turner states that some piles which were put into that bridge were brought from Philadelphia, and it is possible that the animal may have come from there. It may be said, however, that one or two species of small size are found in the North Atlantic, and are said to have been observed in Massachusetts Bay and at Cape Ann, while one species is stated to be common in floating driftwood in the North Atlantic, as far north as Greenland, Iceland and Spitzbergen, and also to have been found in the piles of wharves even on our coast. These species, however, are rarely met with by the engineer; and if they do exist on our coast, they are certainly not at all abundant in localities in which engineering works have been carried on.

The other marine animal which attacks submerged woodwork, known as the limnoria lignorum (*L. terebrans* of some writers), is, as well as the teredo, neither a worm nor a bug. It differs entirely from the teredo, being a crustacean, of the same class as the crab and lobster. The following description of it is given by Verrill in his "Invertebrata of Southern New England": —

Of crustacea, the most important species is the limnoria lignorum. This little creature is greyish in color, and covered with minute hairs. It has the habit of eating burrows for itself into solid wood to the depth of about half an inch. These burrows are nearly round, and of all sizes up to about a sixteenth of an inch in diameter, and they go into the wood at all angles, and are usually more or less crooked. They are often so

* Fig. 2 shows the action of the teredo. No. 1 and the small unnumbered specimen on No. 5 represent portions of spruce pile from wharf at Providence, R. I.; No. 2, portion of oak pile from same; No. 3, portion of pine pile from Somerset, Mass.; No. 5, portion of oak pile from Somerset, Mass.; No. 6, portion of chestnut pile from Somerset, Mass. None of these piles had been treated.



FIG. 2.

numerous as to reduce the wood to mere series of thin partitions between the holes. In this state the wood rapidly decays, or is washed away by the waves, and every new surface exposed is immediately attacked, so that layer after layer is rapidly removed, and the timber thus wastes away and is entirely destroyed in a few years. It destroys soft woods more rapidly than hard ones, but all kinds are attacked except teak. It works chiefly in the softer parts of the wood, between the hard annual layers, and avoids the knots and lines of hard fibre connected with them, as well as rusted portions around nails that have been driven in, and consequently, as the timbers waste away under its attacks, these harder portions stand out in bold relief. Where abundant, it will destroy soft timber at the rate of half an inch or more every year, thus diminishing the effective diameter of piles about an inch annually. Generally, however, the amount is probably not more than half this; but, even at that rate, the largest timbers will soon be destroyed, especially when, as often happens, the teredos are aiding in this work of destruction. It lives in a pretty narrow zone, extending a short distance above and below low-water mark. [?] It occurs all along our shores, from Long Island Sound to Nova Scotia. In the Bay of Fundy it often does great damage to the timbers and other woodwork used in constructing the brush fish-weirs, as well as to the wharves, etc. At Wood's Holl it was formerly found to be very destructive in the piles of the wharves. The piles of the new government wharves have been protected by broad bands of tin plate, covering the zone which it chiefly affects. North of Cape Cod, where the tides are much greater, this zone is broader, and this remedy is not so easily applied. It does great damage also to ship timber floating in the docks, and great losses are sometimes caused in this way. Complaints of such ravages in the Navy Yard at Portsmouth, N. H., have been made, and they also occur at the Charlestown Navy Yard, and in the piles of the wharves at Boston. Probably the wharves and other submerged woodwork in all our seaports, from New York northward, are more or less injured by this creature, and, if it could be accurately estimated, the damage would be found surprisingly great.

Unlike the teredo, this creature is a vegetarian, and eats the wood which it excavates, so that its boring operations provide it with both food and shelter. The burrows are made by means of its stout mandibles or jaws. It is capable of swimming quite rapidly, and can leap backward suddenly by means of its tail. It can creep both forward and backward. Its legs are short, and better adapted for moving up and down in its burrow than elsewhere, and its body is rounded, with parallel sides, and well adapted to its mode of life. When disturbed it will roll itself into a ball. The female carries from seven to nine eggs, or young, in the incubatory pouch at one time.

The destructive habits of this species were first brought prominently to notice, in 1811, by the celebrated Robert Stephenson, who found it rapidly destroying the woodwork at the Bell Rock lighthouse, erected by him on the coast of Scotland. Since that time it has been investigated, and its ravages have been described by numerous European writers. It is very destructive on the coasts of Great Britain, where it is known as the "gribble."

This little animal, apparently the only one which causes trouble north of Cape Cod, abounds in Massachusetts Bay, and may be found in large numbers on the piles along our water front and in our harbor. While preferring a clear salt water, it yet occurs in waters somewhat brackish. It appears to dislike sewage, as well as the refuse from gas works and from some manufacturing establishments, and it is less abundant or entirely absent where these impurities exist in the water. Mr. Turner states that these animals formerly did considerable damage in the Charles River, but that since the gas works were built no special trouble has been experienced, although the animal can still be found abundantly on the piles. That it certainly did at one time considerable damage in the Charles River is shown by the fact, already stated, that several piles under the Fitchburg bridge were found entirely eaten off, as shown in Fig. 1. The general testimony of the railroad companies and of the City Engineer is that at the present time the bridges in the Charles River suffer no considerable damage by the action of these animals. In fact, it is stated on good authority that an oak pile driven in the Charles River will last longer below water than above. The West Boston bridge has oak piles which were driven in 1792, and in Craigie's bridge there are piles which were driven eighty years ago. Oak piles are now used by the city for all bridges, and by almost all the railroad companies, at least for important structures in which the piles are not entirely exposed at low water. Along our water front, in East Boston, and in other localities not directly on the Charles River, spruce piles are destroyed by the animal with considerable rapidity. It is stated that in the Revere Beach slip at Boston probably all the spruce piles are eaten off and supported by the oak ones. In East Boston the spruce piles lasted six to seven years, and were at the end of that time practically gone, and have had to be replaced within six years by oak piles, which resist the action of the animals much better. The experience of this road with respect to its other bridges has already been cited, and reference may also be made here to the statements regarding the wharves of the Boston & Albany Railroad. Further out in the harbor the action of the animal is still more marked, and at Deer Island the oak piles have been practically destroyed in twenty-four years. This will give some idea of the durability of oak piles as compared with spruce.

In this vicinity the limnoria generally eats off piles only a few feet above the bottom, and the range of action appears to be from the bottom, nearly or quite up to low water. As shown in the pile numbered 3 on the figure (1), it sometimes eats away the piles for a considerable length.

On the shores south of Cape Cod, the limnoria, while probably present, does less damage than the teredo, although probably in most cases they work together. The piles shown in Fig. 2, however, show the existence almost entirely of the teredo, and little, if any, evidence of the limnoria.

It remains to consider the remedies which have been tried for protecting timber against these animals. These may be divided into the use of external surface coverings of some kind, and the application of processes by which certain poisonous or preservative substances are introduced into the wood.

With regard to surface coverings, the bark has been found to be quite efficient against both animals as long as it remains entire, since neither the teredo nor the limnoria will work in its soft surface. If no other method of protection is used, piles driven in localities infested with these animals should therefore be well selected with reference to being completely covered with bark, and the bark should be kept entire as far as possible. Another method which has proved effective against the teredo, and also against the limnoria, consists of charring the surface, which again produces a surface covering too soft for the animal to work in. A method of treatment which has been practised with some success in the Gulf of Mexico is the following: The bark is removed, the piles coated with coal tar, rolled over the fire, and the coal tar set on fire. Then another coat is applied and set on fire, and finally a third coat is put on as soon as possible, and while the wood is hot, and dry sand is sprinkled over it. This method not only chars the surface, but impregnates it somewhat with dead oil or creosote, which is itself a protection against the animals.* The charring of the surface, and the washing with wood creosote oil has recently been claimed to be very effective, the quantity of creosote absorbed by the timber being even as small as three pounds per cubic foot.

On some coasts a covering of barnacles forms over piles so thickly as to be a somewhat efficient protection against the teredo. The trouble with this is, of course, that the covering is not sufficiently perfect and impervious to effectually exclude the animal, which may get in before the covering is complete. If the teredo enters the wood in advance, its pallets are used to prevent the formation of the shell of the barnacle, or of any other obstruction, over the small hole through which the animal gets its nourishment.* In some parts of the Gulf of Mexico charred piles are gradually covered with barnacles before the teredo gets in, and reference is made, in the paper referred to, to some piles in the wharves at Rockport, Texas, built

* See a paper by G. W. R. Bayley in the Trans. Am. Soc. C. E., September, 1874.

in 1869, which were charred from high-water mark to the bottom. The charring protected the piles until the barnacles could cover them, and the protection was effective for five years at least. I have been informed that quite a number of the piles driven in this place in 1869 are still there, and "yet doing good service." The timber was yellow pine, thoroughly charred, tarred and sanded, as above described.

The trouble with the process of charring, or with relying upon the covering of bark, is that both coverings are liable to wear off, and the protection is therefore not permanent. To make such coverings most effective, piles should, if possible, be placed so that nothing can rub against them.

A layer of felt, sometimes tarred or impregnated with dead oil, has also been found effective for a time. It requires to be firmly secured to the timber, with no openings through which the animals may enter. Canvas, or even thick paper, without tar or dead oil, would undoubtedly be of advantage as long as it could be maintained intact.

Metal surface coverings have also been tried. Thus, the surface of the exposed wood has been in some cases entirely covered by broad-headed nails, driven in closely. Spruce specimens covered with nails and exposed in New York harbor had no worms after five years, while simple specimens were honeycombed. The experience with oak and pine was similar. In the Gulf of Mexico the first method tried was to cover the piles with felt, and then with a sheathing of zinc or yellow metal, securely nailed. The sheathing was carried down to the bottom, or, if not so far, earth was dumped in up to the bottom of the sheathing. On the New Orleans and Mobile Railroad four thousand to five thousand piles were so sheathed. The zinc corroded rapidly, and in three years there were many small holes in it. The felt did good service for some time after the holes came in the zinc. Yellow metal did not show many holes for six years, but also corroded at last. These protections were efficient as long as they were intact, but they soon became valueless. Tarred felt was considered to be of more value than metal, aside from the fact that it can be more closely fitted to the timber. In Holland a coating of nails or armor has been used to a considerable extent, and it is now used when repairs are necessary in the wharf at Rockport, Texas.

Surface coatings, or washes of paints or other materials, such as coal tar, creosote and verdigris paint, have also been employed, some of which are claimed to afford permanent protection. The result of experiment and of experience, however, whenever carried out through a sufficient length of time, has always been that no sur-

face coating or wash is of permanent value, since it is liable to injury by mechanical means, and cannot be preserved intact. If the woodwork can be removed from the water at intervals, and a new coat put on, they are, however, of considerable benefit. Thus, at Wood's Holl, where an unpainted spar buoy would be destroyed in a year, if painted with verdigris paint it will only be attacked where the paint is rubbed off, and by having two sets of buoys, and taking them up each year, drying, scraping and painting them, they will last much longer than otherwise.* Some of these paints or washes, however, appear to be of benefit in protecting wood from decay, and would probably be useful for painting joints and exposed parts of wood structures where framed together; and as long as they are intact they may be effective against marine animals.

An important series of experiments conducted at Norfolk, Va., under the direction of the United States Navy Department, by Mr. P. C. Asserson, is thus referred to in a valuable paper on the preservation of timber by a committee of the American Society of Civil Engineers. [See Trans., July, 1885.]

The application of two coats of white zinc paint, of two coats of red lead, of coal tar and plaster of paris mixed, of kerosene oil, of rosin and tallow mixed, of fish oil and tallow mixed and put on hot, of verdigris, of carbolic acid, of coal tar and hydraulic cement, of Davis' patent insulating compound, of compressed carbolized paper, of anti-fouling paint, of the Thilmany process, and of "vulcanized fibre," have proved failures.

The only favorable results have been that oak piles cut in the month of January and driven with the bark on have resisted four or five years, or till the bark chafed or rubbed off, and that cypress piles, well charred, have resisted for nine years.

This merely confirms the general conclusion . . . that nothing but the impregnation with creosote, and plenty of it, is an effectual protection against the teredo. Numberless experiments have been tried abroad and in this country, and always with the same result.

With regard to the injection of poisons or other substances into the wood, many such have been tried; but it may be stated that the only method which has proved effectual against marine animals is the injection of a sufficient quantity of dead oil, or so-called creosote, obtained from the distillation of coal tar. Impregnation with inorganic salts has again and again proved valueless. To quote again from the able report of the committee of the American Society of Civil Engineers: —

* Verrill.

As a protection against marine worms, creosote is the only known preservative, and if there be enough of it injected it is thoroughly efficient. All other substances which have been tried have failed, but the success of creosote has been established by abundant evidence all the world over.

The success of this process depends upon the observance of certain conditions with regard to the quality of the oil, the quantity injected, the character of the timber and the method of procedure.

Simply as a protection against marine animals, I do not know of any experiments or of any authoritative statements with regard to the quality of oil which is most effectual. As a protection against decay, however, the following points may be mentioned: The problem to be solved here is evidently to introduce into the wood some germicide, together with some substance which will form an insoluble coating and prevent the entrance of germs and moisture. Not many years ago it was considered that the effective elements in preventing decay were the carbolic and cresylic acids (tar acids), whose germicidal powers are well known; that these coagulated the albumen of the sap, and thus prevented decay, while the other and heavier elements (naphthaline, anthracene, etc.) served to form a more or less impervious coating. It was therefore customary at one time in England, — where creosoting as a means of preserving wood has displaced all other processes, — to specify the use of light oils, which contained a considerable proportion of carbolic acid, and to demand that a large proportion of the oil (in Dr. Letheby's specification of 1867, ninety per cent.) should distil at six hundred degrees Fahr. Experiments have shown, however, that, on account of volatility and solubility of carbolic and cresylic acids, the heavy oils containing less of these and more of the heavy alkaloids, which also possess powerful germicidal properties, gave much better results, and that the carbolic acid soon disappeared from railway sleepers. A leading English authority on this subject, Mr. S. B. Boulton, therefore concludes that the preservative action, aside from the mechanical action in keeping out the water, is due more to the antiseptic bases or alkaloids than to the tar acids, and this view is shared by many eminent chemists. In late years, therefore, the character of English specification has changed, so that it was soon specified that seventy-five per cent. instead of ninety per cent. of the oil should be volatile at six hundred degrees Fahr., and afterwards that *at least twenty-five per cent.* should *not* be volatile at that temperature. Belgian specifications, decided upon after much experiment, require two-thirds of the creosote to have been obtained by distillation at a temperature of over four hundred and eighty-two degrees Fahr., and the remainder at a temperature of over three hundred and ninety-two degrees Fahr.

As a protection against marine animals, it is not clear just what quality of oil is best, but it would seem possible that the results obtained with railway sleepers might in general apply here.

With reference to the quantity of creosote required, this will of course depend upon the numbers and activity of the animal. Thus, with regard to the teredo, we should expect that in the Gulf of Mexico more would be required than on the south shore of New England. We quote again from the report of the committee of the American Society of Civil Engineers: —

> If the timber is to be exposed in sea water to the attacks of the Teredo Navalis and Limnoria Terebrans, there is but one antiseptic which can be used with our present knowledge. This is creosote or dead oil, and the amount of it necessary depends upon the activity of the teredo, or rather upon the length of time during the year when the temperature of the water renders them active. In our northern harbors, probably ten to twelve pounds of creosote to the cubic foot of timber are sufficient; but in southern seas it is probably necessary to inject from fourteen to twenty pounds per cubic foot. . . .
>
> The English have found ten or twelve pounds to a cubic foot sufficient in their harbors. The Dutch and Belgian engineers use about the same. But the French, relying upon a series of very careful experiments, extending over a series of years, made by M. Forestier, consider that about nineteen pounds to the cubic foot is required in their harbors in order to be quite safe against the teredo. This latter quantity has been used in this country by Mr. J. W. Putnam for piles exposed along the Gulf of Mexico, and it seems probable that the higher temperature of the sea water and the consequent activity of the teredo in the French and in our own southern harbors, requires a more thorough impregnation with creosote than in northern waters, to afford immunity.

The efficacy of the process of creosoting as a protection against marine animals appears to depend simply upon the fact that it is distasteful to the animal, and thus prevents its entrance into the timber. It appears to follow from this that it makes little or no difference whether the centre of a pile is penetrated by the oil or not, so long as all exposed surfaces are penetrated to a certain depth and with a quantity of oil sufficient to keep out the animal. What this depth should be cannot be stated, and indeed the assertion is often made, and supported by the results of experience, that the entire pile must be thoroughly creosoted. I do not believe, however, that this is necessary in all cases. Much depends upon the character of the timber and the manner in which the oil enters it. When a long stick is creosoted, the oil enters most freely at the ends, along the grain; but it also penetrates to some extent from the sides, and when such a stick is sawed in two the discoloration will show how the oil has

entered. Towards the ends of the stick the oil may have penetrated from the ends so as to saturate the entire thickness, while towards the centre of the length the penetration may be principally from the sides, and there will be a ring discolored round the edges.

It follows from the above conditions, as was well pointed out by Mr. J. J. R. Croes, in the discussion on the report of the committee of the American Society of Civil Engineers, that the proper criterion is not in all cases the number of pounds injected per cubic foot, since this, with the same depth of penetration, will vary with surface; but that the number of pounds per superficial foot, or the depth of penetration, might be a more satisfactory and scientific one.

The above statements as to quantity have reference to the teredo. I cannot find any statements or any results of experience or experiment with regard to the quantity necessary to afford immunity against the limnoria. It appears, however, that the quantity which will successfully resist the teredo will also resist the limnoria, and it seems very probable, since the latter works on the surface of the wood, that a smaller quantity would even be sufficient. Experiments on this point are much to be desired.

With regard to the quality of the timber: In Europe only timber which is seasoned and thoroughly dry is operated on, while in this country we take timber which is cut fresh and full of moisture and sap. In this case the moisture and sap must be expelled before the creosote can enter,—that is, the timber must be naturally or artificially seasoned. It is also a matter of some importance, as affecting the success of the process, that the timber should be cut in winter while there is little sap in it.

Further, it is advisable to use the softer varieties of timber, into which creosote will penetrate most readily, and sap wood in preference to heart wood. Sap wood, when properly treated, will much outlast untreated heart wood. On this point the committee of the American Society of Civil Engineers say: "Antiseptics penetrate but little into the dense structure of white oak, burr oak, and yellow or hard pine, and are of doubtful utility for white pine, chestnut or spruce, while they readily impregnate and preserve the following varieties of wood: Hemlock, sweet gum, mountain pine, loblolly pine, black oak, red oak, gray oak, water oak, sour oak, cottonwood, maple, beech, poplar and ash."

With regard to the procedure or method of creosoting, it consists essentially in withdrawing the moisture and sap, and introducing creosote in its place. Each of these steps is necessary, since the creosote cannot be introduced until the sap has been removed. One method commonly used in Europe consists in placing the timber in an air-tight cylinder, first exhausting the air, then introducing the

creosote at a temperature of one hundred to one hundred and twenty degrees Fahr. and applying pressure, the air pump being of course stopped. With respect to this process it is to be remarked that the air pump will remove air from the pores of the wood, but will not remove sap and moisture unless they are vaporized by heat, for the reason that it is not the atmospheric pressure, but capillary attraction, that retains them in the wood. If seasoned timber is operated upon, the above process may be sufficient, but with green timber this will not be the case, and for this reason drying or steaming of the timber before immersion in oil has been resorted to. If a dry heat sufficient to evaporate the moisture and sap is used, water will be rapidly withdrawn by the air pump, but the wood will crack, and this is the objection to a dry heat. If steam is used, the wood is liable to be made wetter than before. In any case great care must be exercised with regard to the temperature employed, since the fibre of wood will be weakened by exposure to any temperature above two hundred and fifty degrees, and seriously injured at three hundred degrees, or a little above. In this fact lies one reason for the failure of all processes involving the use of the vapor of dead oil, since the volatilization of the oil requires a temperature so high that the value of the timber is apt to be destroyed.

Steaming is stated by Boulton to have been abandoned in England; but it is still practised in this country, and good results may be accomplished by it if the work is well done. At the works of the New Orleans and Mobile Railroad, at West Pascagoula, Fla., the piles are first cleaned of dirt and bark, sharpened and framed; they are then placed in the cylinder and steamed until heated through; the steam is then condensed, and the vacuum produced, the temperature being kept up by means of superheated steam passed through coils of pipe. This vaporizes the sap and moisture, which are withdrawn by the air pump, and creosote oil is then forced in at a pressure of one hundred and fifty to two hundred pounds to the square inch, from twelve to eighteen pounds being absorbed per cubic foot.

The best process appears to be the one introduced in England by Mr. Boulton. In it the timber is immersed in creosote, which is warmed by steam pipes running through it. At the top of the cylinder is a dome to which the air pump is connected. The timber and creosote are heated, and the air pump operated at the same time. The moisture and sap will be volatilized at a temperature considerably below two hundred and twelve degrees, on account of the reduced pressure, but the temperature is raised to that point and the exhaustion continued until all the water is extracted from the timber, the creosote immediately entering and replacing it. Cracking of the timber is thus prevented. Pressure is not applied at all unless desired.

The steam is condensed and measured. I do not know what the latest experience is with regard to this process, but it appears to be a perfectly rational and scientific one.

One thing should be noticed here with regard to creosoting, and that is, that all cutting and framing should be done before treatment, except in open porous timber which is thoroughly saturated. Otherwise, the outside parts may be cut away in the framing, and the less thoroughly protected inner parts of the wood exposed, and if under water these parts will be at once selected by the teredo. If it is necessary to cut the timber after treatment, the cut surface may be protected to some extent, at least, by a surface wash or paint of some kind.

With regard to the success of creosoting as a means of preventing the ravages of marine animals, it is stated that piles thoroughly creosoted have lasted thirty or forty years and over, in waters infested with the teredo, while untreated timber would only have lasted two to six years.

As to the cost of creosoting, it of course depends upon the cost of the oil, the amount injected, and the expense of doing the work. The total cost is given by the committee of the American Society of Civil Engineers, assuming that from ten to twenty pounds are required to protect the timber (depending upon the exposure) at from fourteen to twenty-four cents per cubic foot, or twelve to twenty-four dollars per one thousand feet board measure. Whether it will pay to go to this expense depends of course upon the cost of timber, the value of the structure supported, and other conditions. No general statement can be made, but in many cases it is undoubtedly cheaper to let the teredo eat the piles than to pay for preserving them. And in the neighborhood of Boston, where oak piles withstand for twenty or thirty years the attacks of the limnoria, it is certainly very doubtful whether it would pay to preserve them. Thus, according to the above statement, the cost of creosoting, with ten pounds per cubic foot, a twelve-inch pile forty feet long, will be about four dollars and a half, on the basis of twelve dollars per thousand feet board measure. On the other hand, oak piles now bring high prices, sometimes as high as twenty-five dollars for an oak pile, say fifty feet long, driven but not fitted. Mr. Cheney, the Assistant City Engineer of Boston, informs me that he would not estimate less than twenty dollars for a fourteen-inch oak pile forty to fifty feet long, driven but not fitted. Spruce piles are very much cheaper, costing five to six cents a foot.

There are now six creosoting works in this country, of which four are on railroads in the Southern States, one at Brooklyn, N. Y., and one on the Old Colony Railroad at Somerset.

Other processes, involving the use of creosote in connection with metallic salts, need not be referred to here.

Little has been done by the railroads of Massachusetts in the way of preserving their timber. The Eastern Railroad has preserved some ties by the process of kyanizing, and the Old Colony Railroad creosotes all piles driven in the Somerset and Broad Cove bridges, but no others. The works at Somerset have been in operation since 1865, having been used at that time in the preservation of about seven hundred piles. The committee of the American Society of Civil Engineers quote the following letter, written in 1878 by Mr. E. N. Winslow, late chief engineer of the road: —

> We have removed about two hundred of the seven hundred. . . . The work was generally done with a rush and in a careless manner, — many of the piles were fitted, knots trimmed up, etc., after they were creosoted. I find they are eaten in patches and spots, commencing apparently where the trimming was done. Upon examination I find the outer portion of the piles, from one-quarter to one-half inch in thickness, filled with creosote, to-day as limpid and odorous as when applied. Hence, I infer the attack has been made in almost every instance where the trimming or fitting was done.

At the present time it is probable that most of the original piles in this bridge have been replaced, and Mr. Morrill informs me that it is necessary almost every year to drive a number of piles, varying from thirty to one hundred, in this bridge. There are about five hundred and fifty piles in the structure, so that if fifty are driven on the average each year, the life of a pile, although creosoted, is only about eleven years. While this is no doubt longer than would be the case with an untreated pile, yet it appears that thorough creosoting should enable them to last a very much longer time; and I have therefore been led to make some inquiries with regard to the process used. I find that the piles are green, and although the man in charge stated that the bark was stripped off where it came off easily, yet I have no doubt that in many cases the bark is left on.

The timber is placed in a cylinder, a partial vacuum produced, the oil is then run in at a temperature which cannot be definitely stated, but which the man in charge estimated at about one hundred and twenty degrees Fahr., and the pressure is then run up to one hundred and twenty pounds, the timber being exposed from fifteen to twenty hours. The amount injected cannot be stated with exactness, but, as nearly as could be estimated from statements of the man in charge of the works, it is quite small, — not over four to six pounds per cubic foot. Of this, a large proportion goes into the bark, and since the bark does not form a perfect covering, — being stripped off in places and left on in others, — it affords no protection to the pile. There are no specifications with regard to the oil, and its quality is

uncertain. It costs five to six cents per gallon, or say six to seven mills per pound.

According to the above description, it is clear that the process, as carried on here, is not thorough, and that the company does not obtain from it the benefit which it ought to receive. The sap, which is at present not extracted from the wood, should be removed, and a larger quantity of creosote should be injected. If this were properly done, the life of the piles should be at least twenty-five or thirty years, instead of ten or eleven, as at present. Some care should be exercised with regard to the quality of the oil, and the entire process should be carried on in a more scientific manner, instead of by guess-work.

It may be mentioned here that in the tracks at Somerset there are some hemlock ties which were creosoted and laid in 1879, and are still perfectly sound.

In the waters north of the Cape the experience of the companies has evidently been that the life of oak piles is so long that it will not pay to subject them to any treatment, neither the city nor the railroad companies having ever treated any oak piles. Ten years ago, however, the city engineer recommended that the oak piles for the Deer Island wharf should be creosoted, but it was not done, and now they are pretty well eaten.

The following experience on the Eastern Railroad, communicated by Mr. Bissell, is interesting. At the Beverly pile bridge the original piles, driven forty-two years ago, were charred, and when examined by a diver in 1884 they were found very little attacked, while the piles which were driven about 1870 were found badly eaten. As already stated, new piles were driven in 1884 after the diver's examination, and these were treated by stripping off the bark, charring and covering with coal tar, essentially as described on page 149. This was an experiment, the result of which will be awaited with some interest.

In concluding this report, I would add one word with regard to the inspection of pile bridges. A thorough inspection of a structure every six months or even every year is apt to be much better, in general, than a too frequent inspection, which is apt to be superficial. An inspector who examines a structure every week does not feel that any considerable change could have taken place since his last inspection, and it is easy to see how such frequent inspection may degenerate into no inspection at all. It may further be remarked that no structure should be allowed to get within a week of a dangerous condition; and a really thorough inspection once or twice a year ought to be sufficient for all practical purposes. With regard to pile bridges, I should recommend, in general, a *thorough* inspection of

the superstructure or part above water every six months, and an examination by a diver of the submerged portions at least once in two years, and preferably once a year. It would further seem advisable that some systematic record should be kept of the results of the inspection of pile structures, especially of those liable to the attacks of marine animals. In the case of the Old Colony's bridge at Somerset the bents are numbered, and the man in charge of the bridge has a sketch of each bent showing each pile. When the bridge is inspected by a diver he makes a record with regard to each pile, stating the condition in which it is found, and afterwards what repairs are undertaken. If an accurate record of all pile structures were kept by all the railroad companies, it would be valuable not only in enabling them to more systematically keep track of the condition of their structures, but also as a source of information to others.

Respectfully submitted,

GEO. F. SWAIN.

[D.]

IN THE MATTER OF THE PETITIONS OF THE MEMBERS OF THE SCHOOL COMMITTEES AND OF OTHER RESIDENTS OF TOPSFIELD, SALISBURY, WENHAM, GEORGETOWN AND BOXFORD, OF NUMEROUS CITIZENS OF ROWLEY, AND OF THE PRINCIPAL OF THE HIGH AND PUTNAM SCHOOLS OF NEWBURYPORT, ASKING FOR RELIEF FROM THE RECENT ADVANCE IN THE PRICE OF SEASON TICKETS ON THE BOSTON & MAINE RAILROAD FOR PUPILS ATTENDING SCHOOL.

Hearing, Jan. 20, 1888.

It appeared that the school rates were discontinued on the Boston & Maine Railroad on the 1st of April last, and Mr. James T. Furber, the general manager of the road, stated that the change was made on account of the passage of the Interstate Commerce Act, and in the belief that sections 2 and 22 of that act prohibited special rates for school children, and that the management of the road came to the conclusion that it would not be justified in issuing school-rate tickets within the State and refusing them to such scholars as travel from one State to another on the line of the road. Section 188 of chapter 112 of the Public Statutes provides that every railroad corporation shall give to all persons or companies reasonable and equal terms, facilities and accommodations for the transportation of themselves, their agents and their servants, and under this section the Board has several times upheld the legality of special rates for school children. Notably, this position was maintained in the year 1885 upon the petition of the selectmen of Medford, praying that the Boston & Maine Railroad be recommended to renew the selling of scholars' tickets at half rates for children seeking instruction in Boston. The decision of the Board upon that petition will be found in the report dated January, 1886, page 122. After a careful consideration of the questions involved, this Board issued an earnest recommendation for the re-establishment of school rates, in accordance with the prayer of the petitioners. No new reason calling for a change in the position of the Board on this subject was urged at the present hearing, except the passage of the Interstate Commerce Act. Under that act no decision has yet issued from the Commission as to the legality of special rates for school children; but, whatever the decision of the Commission may be when the question comes before them, it

is evident that the act is so worded as to give that Commission a larger scope and greater freedom to approve such rates than has been granted to this Board under the laws of this State.

It is, therefore, by no means a necessary conclusion that the Interstate Commission will hold that special school rates are illegal in interstate transportation; nor, if the Interstate Commission should hold that such rates are illegal, does it seem to this Board that any serious complication would arise out of the grant of such rates to scholars for transportation within our State, and the denial thereof to scholars who are obliged to cross State lines.

As no other reason for abolishing the school rates was given, this Board, in conformity with its recommendation in 1886, hereby recommends that school rates be re-established, in accordance with the prayer of the petitioners.

For the Board,

GEORGE G. CROCKER, *Chairman.*

Feb. 10, 1888.

IN THE MATTER OF THE PETITION OF OTHNIEL EAMES AND OTHERS, CITIZENS OF WILMINGTON, PRAYING THAT THE ESTABLISHMENT OF A FLAG STATION AT CARTER'S CROSSING IN SAID TOWN SHOULD BE RECOMMENDED TO THE BOSTON & MAINE RAILROAD COMPANY.

Hearing, May 23, 1888.

It appeared that there are now about forty families living within one-half mile of said Carter's Crossing, and that there is some inquiry for land in that vicinity. The distance from this crossing to the Wilmington station on the Boston & Maine is about two miles, to the station on the Boston & Lowell about two miles, and to the Reading station about three miles by the highway. A flag station was established at this point about thirty years ago, and after a few years was given up because the business was too light to justify its continuance.

Several of the petitioners appeared, and it was their opinion that if three trains each way per day would stop at this station when flagged, an average of from ten to fifteen passengers per day would be obtained.

The evidence was not such as, in the opinion of this Board, would justify a recommendation to the road to establish a flag station at this point.

For the Board,

GEORGE G. CROCKER, *Chairman.*

May 25, 1888.

IN THE MATTER OF THE PETITION OF WILLIAM L. WELLMAN AND OTHERS, RESIDENTS AND PROPERTY OWNERS IN WINTHROP, PRAYING THAT THE BOSTON, WINTHROP & SHORE RAILROAD COMPANY BE REQUIRED TO REBUILD AND OPERATE THAT PART OF ITS RAILROAD BETWEEN COTTAGE HILL STATION AND POINT SHIRLEY WHARF, AND TO FURNISH THE PUBLIC WITH SUITABLE TRANSPORTATION FACILITIES BETWEEN SAID POINTS.

Hearing, June 19, 1888.

For the petitioners, Hon. Henry J. Wells.

The petition was dated Feb. 18, 1888, and was filed with the Board shortly thereafter; but, in accordance with the wishes of the petitioners, the hearing was postponed.

The petitioners submitted testimony to show that the present barge accommodations from Cottage Hill station to Point Shirley are insufficient and unsatisfactory, and that the railroad was at one time operated to Point Shirley, and its operation subsequently discontinued; and they claimed that the company was not justified in abandoning the operation of the road to Point Shirley, or that, in default of such operation, it ought to furnish different and better barge connections. This position would have been sound, and the Board would have felt that the petitioners were entitled to a recommendation that the road should be operated to Point Shirley, or that some satisfactory substitute therefor should be furnished, were it not for the provisions of chapter 258 of the Acts of the present year. This act was passed after the petition was filed with the Board, and by it the Boston, Winthrop & Shore Railroad Company was empowered to discontinue and abandon such portion of its present railroad route and location in the town of Winthrop, and to make such new location or locations of its road in said town or any part or parts thereof as may be approved in writing by the selectmen of said town: provided said company shall construct and complete its road to Point Shirley by its present location or by a new location on the west side of Great Head on or before the first day of June, 1889. The Board is of the opinion that the proviso in the above act must be considered as a determination by the Legislature that the company shall have until the first day of June, 1889, to construct and complete its road to Point Shirley, and that the act has therefore relieved the railroad company from the duty to operate that portion of its road until that date. It would not be consistent with the intention of the act for the Board to issue a recommendation that barge accommodations should be furnished as a substitute for train accom-

modations, which, by the act, the company is not obliged to furnish before the 1st of June, 1889.

The Board has learned that since the hearing the company has voluntarily secured somewhat better barge connections, and that the additional fare for the barge ride to persons buying through tickets, to or from Point Shirley, is five cents, or half the regular fare.

For the Board,

GEORGE G. CROCKER,
Chairman.

July 14, 1888.

[E.]

IN THE MATTER OF THE PROPOSED CROSSINGS, BY THE BOSTON, WINTHROP & SHORE RAILROAD COMPANY, OF PLEASANT STREET AND WASHINGTON AVENUE, IN THE TOWN OF WINTHROP.

The County Commissioners of Middlesex County having adjudged that public necessity requires a crossing at grade at the above streets, their decree under section 123 of chapter 112 of the Public Statutes comes before the Board for its consent in writing thereto.

A branch of the Boston, Winthrop & Shore road now extends to a point on Pleasant Street, at its junction with Buchanan Street. The main line extends to that part of Winthrop called Ocean Spray. The contemplated extension is to connect these two portions, crossing Pleasant Street and Washington Avenue, and the company desires the consent of this Board to the above-mentioned crossings at grade.

The Washington Avenue crossing is at or near the end of the Washington Avenue bridge. While a bridge is a peculiarly dangerous place when horses are frightened by cars, it must be borne in mind that the view of the track is not likely there to be obstructed. The Board sees no feasible way of avoiding a grade crossing at this point, and hereby consents thereto.

The crossing of Pleasant Street involves different considerations. It is in the heart of the town of Winthrop. It is at the junction of two streets and a private way, and it is proposed to locate the railroad diagonally across Pleasant Street at this junction point. It is not improbable that buildings will soon be erected close up to the corners of these streets, so that the view will be obstructed, and travellers will be obliged to rely solely upon the gates. This section is fast becoming a favorite summer resort, and, if the expectations of the owners of real estate in the town are fulfilled, will in a short time be thickly peopled during the summer seasons. It is with a view to accommodate and increase this growth of population that this circuit road is to be built. A grade crossing at the present time and under present conditions might be permissible; but when the probable growth during the next five or ten years is taken into consideration,

such crossing cannot be justified unless the difficulties in the way of avoiding it are practically insurmountable.

The fact, however, is, that it is unusually easy at this point to avoid a crossing at grade. On the west side of the railroad Pleasant Street rises rapidly, so that it will only be necessary to carry the railroad a short distance to the west in order to secure a passage under Pleasant Street. This will require an alteration of the line of the road for a distance of about one thousand feet, and will call for some cutting and a small amount of filling. The company already owns the land necessary for the purpose. The company estimate that the cost of the alteration, including the building of the bridge abutments and the bridge itself, and land damages, will amount to $25,000, and urges that the company has not the funds therefor, and that the proposed circuit must be given up unless a crossing at grade is granted. The Board deems that it is better that the circuit should be given up, rather than that a grade crossing should be established at this point. It is hoped that a more careful examination of the estimates will lead to the conclusion that the expense will not be so great as feared, and that the material necessarily excavated will prove of value in filling other portions of the road.

It is urged that it is not open for this Board, under the certificate of exigency which has been granted, to refuse a crossing at grade, because such certificate declared the exigency of an extension of the line of the road "from the present terminus near the junction of Pleasant and Buchanan streets" to a point, etc.; that a certificate of exigency for the construction of a road from the terminus of an existing road does not cover the construction of a road from a point short of that terminus; that if the road is to be extended exactly from its present terminus, which is at the junction of Pleasant and Buchanan streets, and on the level of those streets, it is impossible to make such extension without crossing said Pleasant Street at grade; and that therefore the refusal to assent to a grade crossing at Pleasant Street practically nullifies the previously issued certificate of exigency.

It would have been proper for the Board, when it had the question of the issue of a certificate of exigency before it, to consider the grade crossing questions which would probably arise; but its failure at that time to realize the gravity of danger attaching to any particular crossing would not be a satisfactory excuse for shutting its eyes to those dangers when the subject of grade crossings is especially brought to its attention for its approval or disapproval, as required by law. If the Board overlooked an important element, or did not appreciate its bearings at that time, it has an opportunity now to correct that oversight or mistake, and the way to correct it is not by

confirmation. Moreover, the exact terminus of the branch at the time when the certificate was issued was not known to the Board, if indeed it was at that time determined. The road was not opened for public use until the following June.

Two certificates of exigency, covering this portion of the road, have been issued on the petition of the company. The first petition, dated Jan. 4, 1887, was for a certificate of exigency for "an extension of the Winthrop Branch from the junction of Buchanan and Pleasant streets, crossing the latter street at grade, . . . to a point," etc.

On that petition there was issued, on the 26th of January, 1887, a certificate of exigency for "a branch or extension of the petitioners' railroad from a point on their Winthrop Branch, near the junction of Pleasant and Buchanan streets," to a point, etc. Thus special pains was taken to prevent any claim that the certificate covered only an extension of the road from its exact terminus, and that the crossing of Pleasant Street at grade was therefore a necessity.

The special object of the second petition was said to be to change the other terminus of the extension from a point south of Washington Avenue bridge to a point north of said bridge, near where the main line crosses Shirley Street. This feature of the case was fully discussed at the hearing, and the amendment petitioned for was granted. In this petition all reference to crossing Pleasant Street at grade was omitted, nor was the subject discussed at the hearing; and the Board had no intention of modifying the original certificate in that respect, but the guarded phraseology of the first certificate was, unfortunately, not used.

The claim that the second certificate is practically nullified by a refusal to grant a grade crossing at Pleasant Street may have influenced the County Commissioners in their decision. It certainly was not the intention of this Board by the form of its certificate to abridge in any way the free and independent judgment of a co-ordinate board.

Two wrongs do not make a right. The crossing at grade ought not to be permitted. If a grade crossing is established now, it will be difficult and expensive to abolish it in the future. Prevention is better than cure, and prevention now is easy.

The company found that its original petition was defective, and by its request an amended certificate of exigency was issued. If now it finds that this amended certificate is insufficient, it can again petition for amendment.

It was also claimed that if the railroad passes under Pleasant Street, as here suggested, it will be necessary to cross Sunnyside Avenue, the private way before mentioned, at grade. Sunnyside Avenue, at the point where the railroad would cross it, is now seven

feet above the grade of the railroad, and if it should be laid out at any time as a public street, it would be an easy task to raise it eight or ten feet, so that the railroad should pass under it also.

The Board therefore does not consent to a crossing of Pleasant Street, at its junction with Buchanan Street, at grade.

For the Board,

GEORGE G. CROCKER,
Chairman.

Feb. 4, 1888.

[F.]

ALTERATION OF THE CROSSING OF CENTRE STREET AND MT. VERNON STREET, OVER THE BOSTON & PROVIDENCE RAILROAD.

COMMONWEALTH OF MASSACHUSETTS,
IN THE BOARD OF RAILROAD COMMISSIONERS, July 14, 1888.

Upon the petition of the directors of the Boston & Providence Railroad Corporation to the Railroad Commissioners acting as County Commissioners for the County of Suffolk, filed on the eighteenth day of May, 1888, asking the Board to prescribe the manner and limits within which an alteration may be made in the crossing of Centre and Mount Vernon streets in the city of Boston, in said county, over the Boston & Providence Railroad, and in the approaches to the crossing and in the bridge by which said streets are there carried over the railroad tracks; it appearing that the petitioners have given notice of hearing upon said petition by the Board, as ordered by the Board on the eighteenth day of May, 1888, by publication of the petition and order thereon of that date in "The Boston Daily Advertiser" once a week for three successive weeks, the last publication being more than three days before the twentieth day of June, 1888; and that the petitioners have also given the notice to the city of Boston required by the order of the Board on the twenty-ninth day of June, 1888, by serving a copy of said petition and of said order on the city clerk of the city of Boston more than seven days before the tenth day of July, 1888; and counsel for the petitioners having been heard, and counsel for various land-owners adjoining said streets having also been heard, and the city of Boston not having appeared in opposition thereto, and the Board having personally examined the locality of said bridge and crossing, — the Board do decide that the alteration prayed for by said petition is necessary, and hereby prescribe the manner and limits within which it shall be made, as follows: —

The grade of said bridge and the approaches thereto shall be changed so as to conform to the grade shown by the red lines and figures on plan and profiles of said streets, made by S. L. Minot, dated Boston, June 19, 1888, this day filed with the Board.

The grade of said bridge and approaches on the easterly side of said Centre Street is established as follows: Beginning at the present grade of said street, at a point fifty-five (55) feet distant northerly from the north-easterly corner of said bridge, where the

elevation is one hundred and sixty-three and fifty-six one-hundredths feet (163.56) above the city base, thence running southerly, on an ascending grade of two and fifty one-hundredths (2.50) feet in one hundred (100) feet, fifty-five (55) feet to said north-easterly corner; thence on a level grade at an elevation of one hundred and sixty-four and ninety-three one-hundredths feet (164.93) above said city base, fifty-three feet (53) across said bridge; thence southerly, on a descending grade of three and ninety-one one-hundredths feet (3.91) in one hundred (100) feet, one hundred feet (100) to the present grade of said street, where the elevation is one hundred and sixty-one and two one-hundredths feet (161.02) above said city base.

The grade of said bridge on the southerly side of Mount Vernon Street and the approaches on Mount Vernon and Centre streets is established as follows: —

Beginning at the curbstone over catch basin on said southerly side, near the westerly corner of said bridge, at an elevation of one hundred and sixty-four and seventeen one-hundredths feet (164.17) above said city base, thence running easterly on a level grade eight (8) feet; thence easterly on a descending grade of eighty-nine one-hundredths foot (0.89) in one hundred feet (100), in the line of the water-pipes across said bridge, forty-five feet (45); thence, on a descending grade of five and eight hundred and fifty-five one-thousandths feet (5.855) in one hundred feet (100), forty-six and four-tenths feet (46.4) to the curbstone at the corner of said Mount Vernon and Centre streets; thence, continuing the same grade southerly on Centre Street, sixty-seven (67) feet to the present grade of the curbstone, where the elevation is one hundred and fifty-seven and thirteen one-hundredths feet (157.13) above said city base.

The grade along the concrete sidewalk at the junction of Centre and Mount Vernon streets is established as follows: —

Beginning at the curbstone on the corner of said Centre Street and the driveway leading to the church of the Second Evangelical Society at an elevation of one hundred and sixty-four and thirty-one one-hundredths feet (164.31) above said city base, thence running south-westerly on an ascending grade of one and eighty-seven one-hundredths feet (1.87) in one hundred (100) feet, twenty-four (24) feet; thence south-westerly on a level grade, at an elevation of one hundred and sixty-four and seventy-six one-hundredths feet (164.76) above said city base fifty feet (50); thence south-westerly on a descending grade of sixty-four one-hundredths foot (0.64) in one hundred feet (100), fifty feet (50); thence westerly on an ascending grade of eighty-four one-hundredths foot (0.84) in one hundred feet (100), thirty-one feet (31) to the curbstone over catch basin on the

northerly side of said Mount Vernon Street, the elevation of which is one hundred and sixty-four and seventy one-hundredths feet (164.70) above said city base.

The foregoing decision is hereby certified to the petitioners and to the city of Boston, and all parties interested therein, as required by statute in such case made and provided.

GEORGE G. CROCKER.
EDWARD W. KINSLEY.
EVERETT A. STEVENS.

[G.]

IN THE MATTER OF THE PETITION OF THE OLD COLONY RAILROAD COMPANY FOR A CERTIFICATE THAT PUBLIC CONVENIENCE AND NECESSITY REQUIRE THE CONSTRUCTION OF A BRANCH, OR EXTENSION OF ITS ROAD, FROM SOME POINT ON THE LINE OF ITS ROAD IN THE TOWN OF WALPOLE, THROUGH THE TOWNS OF WALPOLE, NORFOLK, WRENTHAM AND NORTH ATTLEBOROUGH, TO SOME POINT ON THE LINE OF THE ATTLEBOROUGH BRANCH RAILROAD, AND OF THE PETITION OF AN ASSOCIATION FOR THE FORMATION OF THE NORTH ATTLEBOROUGH & WRENTHAM RAILROAD COMPANY, FOR A CERTIFICATE THAT PUBLIC CONVENIENCE AND NECESSITY REQUIRE THE CONSTRUCTION OF A RAILROAD, COMMENCING AT OR NEAR THE STATION OF THE NEW YORK & NEW ENGLAND RAILROAD COMPANY, IN NORTH ATTLEBOROUGH, KNOWN AS ADAMSDALE, AND EXTENDING THROUGH THE TOWNS OF NORTH ATTLEBOROUGH, WRENTHAM, NORFOLK AND WALPOLE, TO A TERMINUS IN WALPOLE.

Hearings, — 17th, 19th and 23d October.

For the Old Colony Railroad Company, Josiah H. Benton, Jr. For the association for formation of the North Attleborough & Wrentham Railroad Company, Fred H. Williams.

Before either of the foregoing petitions was filed, another petition of the directors of an association for the formation of the North Attleborough & Wrentham Railroad Company had been filed with the Board, and, after notice and hearing had been given upon it, the petition was, on September 26, withdrawn, owing to certain irregularities and defects which had been discovered in the proceedings.

The initial step was therefore taken by an association of which the present association petitioner is the outgrowth, though the original petition was withdrawn, and new articles of association were entered into.

The order of events was as follows : —

The original petition of the association was withdrawn on September 26. On September 27 new articles of association were circulated

for signatures, and they were printed and posted September 28, and published on the 29th. The directors of the Old Colony Railroad Company, on September 28, voted to present their petition, which was filed October 2, and the petition of the directors of the association was filed October 6.

Each of the petitioners appears to have complied with all requirements of the Statutes preliminary to the issuance of a certificate.

The Board is satisfied, upon the evidence which was submitted, that public convenience and necessity does not require the granting of a certificate upon both petitions.

There is nothing in the statute which specially defines the powers and duties of the Board under such circumstances. There is nothing which directly authorizes the Board, in the case of two or more petitioners proposing to build railroads on locations nearly or quite identical, and presenting their petitions at, or nearly at, the same time, to grant the certificate to one and refuse it to the others. Since the passage of the law under which the present proceedings are conducted (Statutes 1882, chapter 265) no case has come before this Board in which there have been contemporaneous petitioners for certificates covering parallel or coincident routes. One of the chief reasons, however, assigned for the passage of the act, as evidenced by the discussions embodied in the reports of the Board, was the fear that under the law as it existed prior to 1882 it would be possible for two or more sets of associates to deluge a district with parallel routes.

In the report of the year 1882 occurs the following: —

> There is practical mischief under our present law. Under it, three parallel routes have been demanded upon Nantasket Beach, where three roads would destroy each other and destroy the beauty and value of the beach itself. No virtue in the law saved us from this absurdity and wrong.
>
> Under this law, four steam roads, running through the city of Boston, from end to end and from side to side, were demanded, and must have been granted but for a technical objection. The bombardment of our city would not have injured it more than the construction of these roads would have done. It is said that they would never have been constructed; and this is true. But it does not follow that no harm would have been done. The cloud hanging for a year over the vast amount of property condemned would have rendered impossible either sales or improvements. And, in addition to the sense of insecurity affecting all property-holders, the actual loss of value would have been immense.

The question arises, whether the Board is bound to act upon the petition first presented, and grant it, if it is proved that public convenience and necessity require the construction of a railroad as

proposed, without any reference to the pendency of another petition proposing a similar route, which route would be unnecessary if the first petition were granted, letting, therefore, priority in the time of filing the petition determine the relative rights of the parties, or whether the Board should, before acting upon the first petition, hear the case presented by both or all sets of petitioners, and grant the certificate to that petitioner which, considering all the circumstances of convenience, of accommodations, of cost and of ability, makes out the strongest case.

Difficult as the task may be thus to decide between the relative claims of petitioners for the grant of the same powers and privileges, the Board is of the opinion that the statute does contemplate the exercise of such selective power, and that justice and a due regard for the public interest demand it.

Priority of time may, under certain circumstances, be an important factor in arriving at the decision, but in the present case it appears to the Board that the circumstances were such that the case of the Old Colony Railroad, though having technical priority, must stand or fall upon its other merits.

Both of the proposed routes have one terminus in the town of Walpole. The route of the Old Colony connects with that line of its road which runs from New Bedford to Fitchburg and to Lowell, crossing and connecting with the Boston & Albany at South Framingham, and the route of the association connects with the New York & New England road at a point south of Walpole Junction. So far as concerns those portions of the proposed routes which are north of the town of Wrentham, there is little upon which to base a selection, unless it be in the connections which they make. So far, also, as the routes in the town of Wrentham itself are concerned, the necessary difference, if any, in the proposed routes does not seem to be important. It is probable that either petitioner could adopt such route through that town as would be satisfactory to the selectmen. The route of the Old Colony Railroad in North Attleborough terminates at the station of the North Attleborough Branch in that town, while the route of the association passes west of the business centre of the town of North Attleborough, and makes connection at Adamsdale with the Rhode Island & Massachusetts Railroad, now operated by the New York & New England Railroad Company.

For people from North Attleborough or Wrentham going to Boston or other stations north, one route is practically as good and as short as the other. Boston passengers in either case would travel over the New York & New England Railroad from Walpole Junction. In going, however, to Providence, it would be some four miles shorter

to go by the route of the association through Adamsdale rather than by the route of the Old Colony through the town of Attleborough, and as there is a large amount of travel from Wrentham and North Attleborough to Providence, more, in fact, than to Boston, this is an important consideration. Another important consideration urged in support of the petition of the association was, that if its petition is granted, the town of North Attleborough will reap the benefit of competition, since the new road will compete with the Old Colony, thereby securing increased facilities and reduced rates; and still another fact appeared in evidence which has great weight with the Board and deserves careful consideration, namely, that practically all the people having important interests at stake in the towns of North Attleborough and Wrentham, with the exception of some of those who are specially interested in the stock of the North Attleborough Branch, are petitioners that the prayer of the association may be granted, believing in the words of their petition, as follows: —

We believe that public convenience and necessity require the road proposed by the association rather than that proposed by the Old Colony Railroad Corporation; that we shall derive better railroad facilities and advantages under the management of the said North Attleborough & Wrentham Railroad Company than under that of the Old Colony Railroad Company; and that, while the present interests and demands of our town require the building of such a road as is proposed by the North Attleborough & Wrentham Railroad Company, the future growth of the town and the establishment of any new business interests make such a road indispensable; and that, on the other hand, the extension proposed by the Old Colony Railroad Company would neither satisfy our present needs nor give any promise of future development of the town.

While the carefully considered opinions of the people living in the vicinity as to the relative advantages to them of the respective routes should have deserved weight with the Board, it is nevertheless incumbent upon its members to make up their own judgment upon all the circumstances developed at the hearing, and in case of error of judgment they cannot shield themselves under the cover of petitions, no matter how numerously they may be signed. The petitioners may have heard and considered only one side of the case. Both sides have been presented to the Board, and upon it, and not upon the petitioners, must rest the responsibility for its action.

The association's route from North Attleborough to Providence is four miles shorter than the existing road of the Old Colony, but, in order to save that four miles, it is necessary for the association to build four miles more of track than the Old Colony proposes to build; that is, the length of the association's road from Adamsdale to its connection

with the New York & New England Railroad in Walpole is 3.96 miles more than the length of the proposed extension of the Old Colony from North Attleborough to a point on its lines in Walpole. The engineer's estimate of the cost of constructing the 16.54 miles of road as proposed by the association, with a few crossings at grade of unimportant ways, is $488,000. The estimate of the engineer of the Old Colony Railroad Company for building its 12.60 miles of road, with no grade crossings at all, is $375,000, so that the amount invested by the association will be at least $100,000 more than that to be invested by the Old Colony Railroad.

The question therefore, so far as this feature of the case is concerned, comes down to this: Does public convenience and necessity require a competing line between North Attleborough and Providence four miles shorter than the existing route at an outlay for construction of over $100,000?

So far as freight is concerned, the difference in distance would not be a material consideration. So far as the passenger traffic is concerned, the Board deems that the arguments adduced from the saving of distance, unless supported by other considerations, are insufficient to justify the construction of four more miles of road.

The next question is, whether it is necessary to construct a road to compete with the Old Colony in order to secure proper accommodations and reasonable rates from North Attleborough to Providence and points beyond. The directors of the association failed to prove that the existing accommodations and facilities were inadequate or that the rates were unreasonable. Were the people of North Attleborough suffering from this cause, they might seek a remedy by building a competing line; but it must be remembered that when a new competing road is built, the public must somehow pay the operating expenses of both lines, and also a fair profit on the amount invested, or else some of the investors must suffer loss. Generally such line ought not to be built unless the business of the district is, or is likely soon to become, large enough to pay a fair profit on both roads. In this case there is no such probability.

One of the chief purposes of our Statutes relating to railroads and one of the special duties of this Board is to secure for the public proper accommodations, facilities and rates, without resort to the wasteful expedient of building an otherwise unnecessary road and the consequent ruinous competition.

Moreover, competition between a strong and a weak road seldom results in raising the standard of the accommodations and facilities of the stronger road. The North Attleborough & Wrentham Railroad must of necessity be a comparatively weak and unprofitable road unless it is fortunate enough, through rivalry between the Old Colony

and the New York & New England Railroad Companies, to secure a lease of its property to one of these roads upon favorable terms.

It is clear beyond the necessity of argument that this road, operated independently, cannot for many years pay a reasonable percentage upon its cost. It may become a good investment if both the Old Colony and the New York & New England Railroad Companies desire to get control of it; but if either one should withdraw from the competition, the other would be able to take the property practically upon its own terms, and until one of these companies sees fit to undertake its management, the subscribers to stock will be obliged to carry the load with but little or no return on their investment. There is no road which it is so difficult to keep up to the proper standard of roadbed, accommodations and facilities as the road which truthfully responds to all recommendations, "We cannot do what we should and would, because only by the greatest parsimony can we keep ourselves from running deeper and deeper into debt."

The history of similar branch roads in Massachusetts is the history of a struggle for existence during a series of years, until, after much painful experience of the difficulties and unprofitableness of running short and independent lines, they are absorbed by their connections either by purchase at a reduction from their original cost or by lease at a rental which is but an inadequate return upon the money invested. In spite of this, it by no means follows that they ought not to have been built, since the indirect benefit to the community which they serve generally exceeds the direct loss which comes to those who, from public spirit or from an exaggerated idea as to their probable profits, invest their money in them. One such branch to North Attleborough has already been built, and the association now proposes to construct another.

The North Attleborough Branch Railroad, extending from North Attleborough to Attleborough, was built by public-spirited citizens of that community for the benefit of North Attleborough, and their position here deserves consideration. Their road is leased at present to the Old Colony Railroad (the successors of the Boston & Providence Railroad Company) at a fixed rental, and as long as that lease continues, about twelve years, the stockholders will undoubtedly receive their rent; but if a competing line to Providence is built, they will at the expiration of the present lease find that the value of their property for rental purposes has been seriously diminished.

The Old Colony has arrangements for through billing via Providence for New York and Western freight, at Boston rates for all points on the Providence Division, including North Attleborough, over one all-rail line and over two steamboat lines, one from India Point and one from Stonington. The proposed North Attleborough &

Wrentham Railroad, whether run as an independent road, or fortunately leased to the New York & New England, could secure no better facilities or rates than the Old Colony can now furnish, and is now furnishing, to points on its road.

The Old Colony, also by reason of its immediate connections with the Boston & Albany and the more northern lines, and the large volume of business coming to it over those lines, can make and has already made arrangements for through billing of freight over those lines to points on its road at rates more favorable to its patrons and more profitable to itself than can be secured by a branch road doing a small business and one corporate step further removed from the trunk line, unless such branch road does its part of the work without material compensation.

So far, therefore, as both facilities and rates for through freight are concerned, it seems that the business interests of Wrentham and North Attleborough are likely to be best subserved if the proposed road is built and operated by the Old Colony.

The capital stock of the North Attleborough & Wrentham Railroad Company, as fixed by the articles of association, is $250,000. The estimated cost of constructing the road is $488,000. An equipment of three locomotives, four passenger-cars and two baggage-cars would cost forty to fifty thousand dollars. A railroad company may issue bonds to an amount not exceeding the capital stock of the corporation, so that the amount received from the issue of the capital stock as fixed by the articles of association, and the issue of bonds to the full extent authorized by law, would be insufficient to pay for the construction of the road and the cost of equipping it, and the company would have to carry a floating indebtedness for a portion of its equipment and for its current expenses.

There was evidence at the hearing that some of the subscribers were willing to take additional stock if the capital should be increased, but the evidence was not sufficient to prove that all the requisite additional stock could be raised. Whether the inadequacy of the capital stock, as fixed by the articles of association, would of itself be a sufficient ground for rejecting the petition or not, such inadequacy, nevertheless, does show that the subscribers did not fully appreciate the extent of the work proposed to be undertaken by them, and it raises a question as to whether all of them would have subscribed had they known that the capital stock should have been $350,000 or $400,000 in order to place their corporation in a position in which it would not be the victim of financial embarrassment.

A community cannot, in the long run, be so well served by a railroad company which is obliged to pay high rates of interest for money borrowed, as by a company the financial standing of which is

such that it can borrow money at the lowest market rates. It was in evidence that the money which the Old Colony Railroad would put into the construction of this branch would cost it only about four per cent. per annum. Not only is it for the interest of the community that the money for building and operating a road should be obtained at low rates, but it is also important that the road should be built by the party who can do it at the least cost. It is probable that the Old Colony Railroad could build a line from ten to twenty per cent. cheaper than the same line would cost an independent corporation like that of the North Attleborough & Wrentham Company.

For the foregoing reasons, this Board is of the opinion that public necessity and convenience require the construction of a branch or extension of the road of the Old Colony Railroad Company from some point on the line of its road in the town of Walpole, through the towns of Walpole, Norfolk, Wrentham and North Attleborough, to some point on the line of the Attleborough Branch Railroad, as set forth in the petition of the Old Colony Railroad Company.

The petition of the directors of the association for the formation of the North Attleborough & Wrentham Railroad Company for a certificate that public convenience and necessity require the construction of a railroad as proposed in their articles of association is not granted.

For the Board,

GEORGE G. CROCKER,
Chairman.

Nov. 19, 1888.

[H.]

ORDER AUTHORIZING THE WEST END STREET RAILWAY COMPANY TO MAKE UNDERGROUND AND SURFACE ALTERATIONS OF STREETS IN BOSTON AND BROOKLINE FOR THE ESTABLISHMENT OF THE ELECTRIC SYSTEM OF MOTIVE POWER.

In the Board of Railroad Commissioners,
Boston, October, 1883.

Whereas, The West End Street Railway Company has obtained consent from the Board of Aldermen of the city of Boston to establish and maintain the electric system of motive power in the operation of its cars by the overhead system, so called, on certain streets in said city whereon its tracks are located, to wit: on Washington and Cambridge streets and Harvard Avenue in the Brighton district, from Oak Square to the dividing line between Boston and Brookline on said Harvard Avenue; and also on Beacon Street, from the dividing line between Brookline and Boston at St. Mary's Street, to Ipswich Street in said city; and to make such underground and surface alterations in said streets, and to erect, maintain and use such wires and iron poles, with locations for the poles, as may be necessary to establish and maintain such overhead system; and also consent to establish and maintain the conduit electric system of motive power in the operation of its cars on certain other streets in said city whereon its tracks are located, to wit: on said Beacon Street from Ipswich Street to West Chester Park, and thence on West Chester Park to Boylston Street, and thence on said Boylston Street to Park Square, and thence on Park Square, Church and Providence streets to Boylston Street, and to make such underground and surface alterations in said streets as may be necessary to establish and maintain conduits for the operation of its cars by said conduit system on said streets;

And whereas, The selectmen of the town of Brookline have in like manner given said company locations for carrying poles for wires wherewith to operate its cars by the overhead electric system on Beacon Street in said town, from the dividing line between Boston and Brookline at St. Mary's Street to the dividing line between said city and town near Chestnut Hill Reservoir; and also on that part of Harvard Street north of Beacon Street to the dividing line between

Boston and Brookline on said Harvard Street; on all which streets in Brookline said company's tracks are now duly located;

And whereas, Said company has petitioned said Board of Railroad Commissioners for permission to make the underground and surface alterations in said streets in Boston and Brookline necessary for the purpose of establishing and maintaining said electric systems of motive power, and for such approval of the powers and locations granted as is conformable to law;

And whereas, After due notice and hearing it appears that the underground and surface alterations in said streets hereinafter described are necessary for the purposes named: it is therefore

Ordered, That permission be given said West End Street Railway Company to make underground and surface alterations in Washington and Cambridge streets and on Harvard Avenue in said Brighton district, and in that part of Harvard Street north of Beacon Street in Brookline; and also in Beacon Street from said dividing line between Boston and Brookline near Chestnut Hill Reservoir, through Brookline and Boston to said Ipswich Street, for the purpose of establishing and maintaining said overhead electric system of motive power on said streets, with poles and wires located and constructed substantially in accordance with plans of A. L. Plympton filed with this Board; and also that said company be permitted to make the underground and surface alterations in said Beacon Street, West Chester Park, Boylston Street, Park Square, Providence and Church streets, for the purpose of establishing and maintaining said conduit electric system of motive power between said Ipswich Street and Park Square on said last-named streets, substantially in accordance with the plans and specifications of Walter H. Knight filed with this Board.

And it is further *Ordered*, That the aforesaid powers and locations granted said company by the city of Boston and the town of Brookline be approved so far as the same are within the jurisdiction of this Board.

Attest,

WM. A. CRAFTS,
Clerk.

[I.]

SPECIAL REPORT TO THE LEGISLATURE OF 1888 BY THE BOARD OF RAILROAD COMMISSIONERS ON THE SUBJECT OF HEATING AND LIGHTING PASSENGER-CARS.

To the Honorable Senate and House of Representatives in General Court assembled.

The Board of Railroad Commissioners, in accordance with the intimation contained in its annual report, hereby makes further report upon the subject of providing better and safer methods for heating and lighting passenger-cars.

Under the authority vested in the Board, under the statute, to employ experts from time to time, as may be necessary, it early in the present year secured the services of Prof. Gaetano Lanza, with instructions to examine the workings of the various systems of heating by steam from the locomotive in use in this State, and especially to test the quantity of steam necessarily used for the purpose. Professor Lanza has, during the past winter, made careful examination of the merits and defects of the various systems, and of the difficulties encountered in their operation, and has lately made to this Board a full report of his investigations and conclusions.

Though the difficulties have not all been surmounted, though there is trouble from the leakage of steam and from the freezing of traps, and the imperfect action of reducing valves on the engine, the report made by Professor Lanza confirms the Board in the opinion that the system of heating by steam from the locomotive is not only practicable and conducive to the comfort and safety of passengers, but it is also desirable as a measure of economy; that it should be adopted as the standard throughout this State; and that the use of the separate heaters in or under cars should only be permitted under exceptional circumstances.

While the Board would not have been justified in taking action upon this matter until the experience of the winter had been gained and the report of the expert made, it fully appreciates that it would now be unwarrantable to require the companies to equip all their cars for steam-heating in season for the coming winter. During the summer the cars are in constant use, and great inconvenience to the public and loss to the companies would result if they should be taken off long enough to fit them with the required appliances. We deem it proper, therefore, to give the railroads until the fall of next year to complete the equipment of their cars with steam-heating appliances. They will then have the coming fall, the winter and the spring in which to accomplish the work.

It is our purpose, unless otherwise instructed by legislative action, to issue a circular to the companies, notifying them that all approvals heretofore granted for methods of heating other than by steam from the locomotive will continue only until the first day of October, 1889, and that thereafter methods of heating by the use of separate heaters, in or under cars, will be approved under exceptional circumstances only by special permit, and recommending the various companies to use all reasonable diligence in fitting their cars and engines with the necessary appliances for steam heating, so that, if possible, the use of the separate heater may, during the coming winter, become the exception rather than the rule.

Respectfully submitted, for the Board,

GEORGE G. CROCKER, *Chairman.*

May 1, 1888.

REPORT OF PROF. GAETANO LANZA IN RELATION TO HEATING CARS BY STEAM FROM THE LOCOMOTIVE.

To the Railroad Commissioners of the State of Massachusetts.

Gentlemen: — In accordance with your directions I have made an investigation of the methods in use by such of the railroads in the State of Massachusetts as heat their cars by means of steam taken from the locomotive, and also of those in use by the Atchison, Topeka & Santa Fe, and I would respectfully present the following report: —

There is, of course, as in any new and important departure, a large number of devices proposed by this, that and the other individual whose chief object is to produce a system on which he can obtain a patent, and then to get the system adopted as a whole by as many roads as possible, so that he may derive the most profit possible from his patent rights.

While the railroad companies in this State are nominally using, as a rule, some one or more of the so-called systems, they have in many cases been trying the different appliances, more or less regardless of the systems, and the subject will be treated in this report from the latter point of view, the different methods for accomplishing any one special object being discussed together, and not as forming a part of a certain so-called system.

We may, therefore, classify the subjects to be considered as follows: —

1. The Means of coupling the Steam Pipes of the Cars together.
2. The Means of reducing the Locomotive Pressure before it reaches the Train.
3. The Means of disposing of the Condensation.
4. The Proper Piping in the Cars to give the Necessary Radiating Surface, and Freedom of Circulation.

5. The Proper Valves to be used.
6. The Disposition of the Main Steam Pipe.
7. The Use of Live Steam, Exhaust Steam or Water.
8. Auxiliary Boilers under the Cars.
9. Means of regulating the Heat in Moderate Weather.
10. Means of taking care of Cars when stored away.
11. Individual Heaters.
12. Tests to determine the Amount of Steam used.
13. Experience of the Roads.
14. General Remarks.

Couplings.

There is a large number of steam couplings in the market, each so-called system having a different one. Indeed it might be said that the differences in the couplings form one of the most distinctive features of the systems. No detailed description of them is necessary, but the following distinguishing features should be mentioned :—

While the greater part depend for flexibility on a flexible rubber hose, there are some which claim as a specially good feature that they are made entirely of metal. Such couplings depend for their flexibility upon ball joints and slip joints. Experience has shown that they wear out and leak badly in a very short time, so that this class of couplings may be pronounced unsuitable.

A feature which exists in a number of couplings and is undoubtedly good is the property of automatically uncoupling whenever the cars break apart. This feature is enjoyed by the Sewall, the Westinghouse and some other couplings. In this class, also, each part of the coupling is attached to a piece of hose attached to the main train pipe of each car, and these couplings should be, and generally are, interchangeable, each half being like the other half. The tightness in such couplings is insured by the force of gravity causing the rubber gaskets, which should be of hard rubber or some similar composition, to press against each other. Such couplings need a certain length of hose and, of course, form a pocket between the cars which might be supposed to collect condensation water, but which, as far as observed, does not present this difficulty.

Some couplings consist of one piece of hose intermediate between two metallic portions to which it is permanently attached, so that this entire portion can be taken off without making up any joints. These couplings have either metallic surfaces in contact, or else rubber gaskets, and are usually made tight by means of a screw. If the train were to break apart they would not uncouple, but would have to break. Moreover, it does not seem probable that a metallic joint can be kept as tight as a gasket, unless it be more carefully handled than it is likely to be in the regular service of a railroad.

In conclusion it is very important that all those roads that are at all likely to interchange cars should adopt the same coupling, even though they have nothing else alike.

The following considerations favor the adoption of the Westinghouse air-brake coupling: —

The train hands are all familiar with its management.

The patent expires shortly and the payment of royalty would be avoided.

The three-quarter inch coupling, now used for the air brake, would doubtless be too small and it would be necessary to adopt the one and one-half inch coupling. Also, it would be necessary to have the gaskets made of hard rubber or of some similar compound and not of soft rubber. The Boston & Albany and the New York & New England railroads have already tried the Westinghouse couplings and they work well.

Reducing Valves.

In regard to the means for reducing the pressure of the steam before it reaches the train, the most primitive way is to introduce, into the pipe leading to the train, an ordinary globe valve and to require the engineer to regulate it by hand so as to produce the proper pressure on the train. Some do this from choice, and others because they have been unable to find a reducing valve that did not get out of order. Some of those who use a globe valve add a safety valve, which blows off at a certain pressure and thus warns the engineer that the globe valve wants attention. Nevertheless, the proper way to accomplish the object is to introduce into the pipe a reducing valve, which, when once set, will keep the pressure on the train uniform without the necessity of constant adjustment by the engineer.

There are many reducing valves in the market, but when they are subjected to high pressures and not handled with more than ordinary care they too often fail. This failure is often due to their extreme delicacy and to the difficulty in keeping lubricated certain parts which are exposed to very high temperatures and require specially good lubrication. These valves generally have some kind of flexible diaphragm, and the possibility of making such a valve succeed, under trying circumstances and long usage, is questionable. On the other hand, valves composed of pistons of different sizes have been tried, but not to any great extent, and the most that can be said is that there is promise of success in this quarter.

Traps.

The means of disposing of the condensation without letting it freeze and thus burst the pipes or other connections is one of the most serious questions of all those connected with steam heating. Even the so-called frost-proof traps freeze up at times.

First as to the object of any trap.

In some of the so-called systems the steam is taken into each car from a cross or a T in the main steam pipe under or in the floor of the car, and that portion which condenses in any one car must be drained from that car and does not pass into the next. Of course this draining can be accomplished by means of a simple globe valve without any trap at all, but if this is done the following difficulties are met: —

If the valve is closed while the train is running, too much condensation water may collect before it can be let out, thus getting water into the main pipe and preventing a good circulation of the steam and, at the same time, permitting the condensation to cool in the lower part of the pipe and perhaps even freeze and burst the pipe. If, on the other hand, the globe valve is left open enough to avoid the above-described dangers there is leakage and consequent waste of steam, and this may amount to a good deal, especially when the jarring of the train causes the globe valve to open wider during the run. These objections become serious on through trains, and in all cases where the times between stations are long and the stops short, and where the management of the valves is intrusted to green hands; but on roads where the times between stations are short, and where the work is only intrusted to well-drilled hands, the objections stated above are not valid. Thus on the Connecticut River road and on the Boston, Revere Beach & Lynn there is no trouble of this sort and traps could easily be dispensed with. Indeed, there is never any difficulty with frozen traps in the case of roads where the cars are kept warm all the time, whether running or standing still, but there is difficulty when cars have to be left for long periods in the cold with no heat supply. By the Martin, the Emerson and several other systems each car is drained separately.

In the Sewall system the steam passes from the main pipe into a valve in the middle of the car. If this valve is wide open the whole, and if partly open a part, of the steam passes through the car back to the main pipe, from which the condensation may be drained off by a trap or by the globe valve if it is open wide enough. If the trap or valve is closed the whole of the condensation is forced back into the rear car, and from the end of the main pipe of the rear car it is blown out. This is the method most commonly used on the Old

Colony and the Fitchburg railroads during the run, both of these roads using the new style Sewall valve. If the valve or trap is partially open a part is disposed of in each way. When the old style valve is used they are more likely to depend upon the trap to drain the entire condensation of the car. When the condensation is all forced back and globe valves are used instead of traps, it is customary to make use of the valves only on two occasions: —

(*a*). On heating up, to drain the condensation when the steam first starts through the car.

(*b*). On putting the cars away, to drain the main pipe thoroughly, so as to avoid all danger of freezing. For these purposes the globe valve works much better than the trap, as the latter does not furnish a sufficiently free exit for the steam, and freezing ensues when the cars are exposed without heat. There is an increasing tendency with those who use the Sewall system to discard the Sewall trap and use a plain globe valve. This is done on the Fitchburg and on the Old Colony roads.

The idea at the basis of most of the traps, whether those used to drain the main pipe or the car, is that the contraction and the expansion of some expansible metal or liquid, due to different degrees of temperature, shall respectively open and close the valve, — thus opening to let out the water, but closing to keep in the steam. This is effected by causing the trap to close at a certain fixed temperature which, if the steam in the car were at atmospheric pressure, would be 212 degrees Fahrenheit.

The operation of the trap is supposed to be as follows: While the pipes are full of steam, so that the expansible metal is exposed to the temperature of the steam, it expands, closing the valve and the trap is closed; but when the steam condenses so that a certain amount of condensation water collects in the bottom of the pipes, this water comes in contact with the expansible metal. As this water at first is practically at the temperature of the steam, the trap does not open immediately, but when the water nearest the trap cools down, the expansible metal contracts, the valve opens and the water escapes. As soon as steam replaces the water the metal is supposed to expand again and close the valve. The principal difficulty with these traps seems to be that, when the cars are set off in a cool place, they either do not act promptly enough, or else the little slow drip freezes on its way out, and the passages being narrow, the trap gets frozen up, and also the pipes, and hence the steam, when let on again, does not get through. An attempt has been made to remedy this difficulty by means of the so-called frost-proof traps which have

an opening at the top as well as at the bottom, so that even if the lower orifice is frozen, the upper one will furnish an outlet for the steam when it first comes in, until the lower one is thawed out and performs its functions properly. These traps have succeeded, on the whole, rather better than the others, but they can hardly yet be pronounced a success.

The various traps in use may be classified as follows: —

(*a*). A species of box trap, such as the Sewall or the Curtis.

(*b*). A species of trap known as a thermostatic trap, which may be illustrated by the Martin or by a trap devised and used by Mr. Henney, superintendent of motive power of the New York & New England Railroad.

Both kinds have similar troubles and at times freeze up.

There is another way of taking care of the water of condensation which, though it has not yet had an extensive trial, seems to afford the means of avoiding frozen traps. It is the method adopted by Mr. George A. Houston of the Atchison, Topeka & Santa Fe Railroad. The method which he has been using the past winter consists in having under the car a tank into which the condensation falls, and from near the bottom of this tank proceeds a small pipe running up into the car, and emptying at the top into a tank above the floor and within the car. The action is as follows: At first on beginning to heat up, all the pipes and both tanks are full of steam. As soon as condensation has taken place, sufficient to seal the entrance to the small pipe, the steam in the upper tank is separated from the other. Then, on cooling, the pressure decreases and the excess of pressure in the lower tank sends the water up into the upper tank. The original idea of putting the tank under the car was to make it serve as an auxiliary boiler, but Mr. Houston, recognizing the objections to having a tank under the car, is now fitting up a large number of cars with a similar device, where, however, there is no auxiliary boiler, and where in place of the lower tank there is a small box or trap just below the upper floor from which proceeds the small pipe, and the upper tank is not set on the floor, but somewhat higher up. The effect of this is that the condensation water is collected in this upper tank, and thus it is in no danger of freezing, and also it gives out some heat through the walls of the tank into the car. It also furnishes hot water for cleaning up. When the car is set off, a sufficient number of valves are opened wide, and the water is all drained off.

No system of draining off the condensation water can be efficient without the means of properly venting the pipes and letting in air.

Main Pipe; Radiating Pipes and Valves.

It seems to be most common to use one and one-half inch pipe for the main pipe. Some have used one and one-fourth inch, but one and one-half inch is more common and gives better satisfaction generally. As to the location of this pipe, it is most frequently placed under the middle of the car, wrapped, of course, in hair, felt or some other non-conducting covering. A better way is to place it between the sills and box it in. In this case it is also wrapped, and the surrounding woodwork should be protected by tin or sheet iron. Another and a better way yet is to place it inside the car on one or both sides; in this case it is not wrapped, but forms part of the radiating surface. The chief objection to this last arrangement is that the heat cannot be entirely shut off from one car without shutting it off from all the cars behind it. Another objection is that the passages are a little more crooked, but this is more than counterbalanced by gain in heating power.

On account of the exposed conditions of the car the radiating surface should be considerably more than would be required in a building. On the Boston & Albany road they have one square foot of heating surface for each twenty-five cubic feet of space in the car, or one square foot of heating surface for every thirteen square feet of exposed surface, including floor, roof and walls. Of the 2,265 square feet of exposed surface 240 are glass. On the Old Colony road they have one square foot of heating surface for each twenty-six cubic feet of space in the car, or one square foot of heating surface for each thirteen and four-tenths square feet of exposed surface. Of the 2,344 square feet of exposed surface 277 are glass. The above are reasonable proportions.

In regard to the size of the pipes to be used for radiating pipes an opinion based upon experiment cannot be given. As the following conclusions are based on observations only they may be imperfect. It is desirable to so arrange the pipes that there may be as little obstruction as possible to the flow of steam. It is probable, therefore, that one and one-half inch pipe is better than one and one-fourth inch, and two-inch pipe better than one and one-half inch. The larger the pipe also the shorter will be the length of pipe needed. Moreover, there is reason to believe that where two-inch pipes are used the time of heating up is less than where one and one-fourth inch pipes are used, and also that the proportion of the pressure realized in the last car is greater. Nevertheless, in the cases of one and one-fourth inch pipe which have been examined there have been other causes for an increased resistance. Hence it may be that all necessary freedom of circulation can be secured with one and one-

fourth inch pipe, though indications point to two-inch pipe as preferable.

The connection between the main steam pipe and the radiating pipes should be as free as possible, and it is desirable that the steam should not have to pass through the radiating pipes of one car before entering the main pipe of the next. So also the condensation of each car should be drained off from that car and not returned to the main pipe. The most primitive way is to have in the main pipe near the middle of each car a cross from which proceed the pipes that lead steam into the radiating pipes on each side of the car; then a globe valve is placed in the main pipe on each side of the cross, its only use being to shut off the rear end of the main pipe when the car is the last car in the train.

Such a system works all right if proper care is taken of it, but it is desirable to reduce the number of valves needing attention, and also the danger of leakage by the use of some more complicated single valve, which can perform the necessary service and at the same time be more free from liability to leak. In choosing between the different devices, the amount of the reduction of pressure of steam in its passage through the train is therefore a most important consideration, and this should be as small as possible.

A train should be heated without having high pressure steam on any car, for if, in order to get sufficient heat into the rear car, it is necessary to have a very high pressure in the first car, in that car there will be the danger of an explosion or of blowing off an end. This consideration also enforces the importance of freedom from resistance. The above is also a reason why a good and reliable reducing valve is a desideratum.

Exhaust Steam, Live Steam or Water.

The main difficulty with any system of heating by means of water stored in a reservoir, and heated up by steam outside or inside of it, is the length of time required to heat up the cars in cold weather, because while the steam is heating the water it cannot be heating the car to the same extent as it would if not required to heat the water. A hot-water circulation seems to be better adapted either to heating in moderate weather, or else in cases where individual heaters, like the Baker or Johnson heater, are used and fire is kept in them nearly all the time.

Exhaust steam is very much needed in the locomotive to generate the draught, and it is certainly a serious question whether any of it can be spared to heat the train.

Any system which attempts to heat with exhaust steam is liable either to cause back pressure on the cylinder, or else to spoil the

draught. Either of these results is very detrimental to the running of the locomotive. Mr. Houston of the Atchison, Topeka & Santa Fe Railroad has used a system utilizing exhaust steam which is open to the above objections to a slight degree only, if at all. The steam is taken from a point about half way down the exhaust nozzle by a pipe, and enters the pipe in the direction of its flow, thus utilizing its velocity to send it into the train pipe. A series of check valves retain the maximum pressure in the train.

He also uses a peculiar valve by means of which exhaust steam is admitted whenever the throttle valve is open, and whenever the throttle is closed live steam is used, so that the heating up is all done with live and not exhaust steam, and it is perfectly possible at any moment to shut off the exhaust steam and admit live steam instead.

The system, at the time when the examination was made, had been run on three cars in line only, and is reported to have succeeded in the very coldest weather in heating them thoroughly. Whether there will be sufficient exhaust steam to spare to heat a line of eight or ten or twelve cars is not yet demonstrated, nor have any tests yet been made to determine the effect, if any, upon the back pressure or upon the draught, though none has been noticed in the running of the engine.

Another difficulty is that when exhaust steam is used oil is liable to get into the pipes and valves, which therefore need frequent cleaning.

All the above leads to the conclusion that the main reliance must be upon live steam, with a possible use of exhaust steam when, and if, it can be spared.

No return system has been investigated, as none is used on the railroads of the State.

Auxiliary Boilers.

The roads that have auxiliary boilers under their cars are making less and less use of them. The plan of having the fire under the car is believed to be radically wrong and more dangerous than a fire in the cars, for it is not accessible during the run, and if the train is stalled in a snow-drift the auxiliary boiler becomes practically useless.

Regulation of Heat in Moderate Weather.

There is not in use on the Massachusetts roads any successful device for regulating the heat in moderate weather, other than by shutting off the steam and opening the ventilators and windows. Mr. Houston has a scheme in contemplation, but has not yet put it in

practical operation, and one has been in use the past winter on the Chicago, Milwaukee & St. Paul, but no personal examination of it has been made.

Care of the Cars when Stored Away.

As the locomotive generally cannot be attached to cars for such length of time before they are to start as will be required to heat them, it will be necessary at all the principal stations, and, perhaps, at all the stations where cars are left, that there should be either a stationary boiler or else one or more locomotives specially devoted to heating cars, and that pipes or hose should lead from the boiler to those points where cars will stand when they are to be heated. For this purpose an ordinary low-pressure boiler would be sufficient, and it could also be used to heat the station.

This method is adopted by the Boston & Albany at Boston and Springfield, and by the Connecticut River at Springfield. It would certainly be the method to be adopted by most roads at all stations where they have occasion to leave cars in the cold for any length of time. Some roads, especially the Old Colony, are, however, obliged to leave cars at so many stations that it would be at least a hardship to be obliged to have a stationary boiler at each one of them.

It is an open question whether there is any other feasible means of heating up cars at the smaller stations where only two or three cars are left.

It having been suggested that oil stoves might be used for this purpose, the following experiments were made to determine their heating powers.

Two oil stoves each having four burners, each burner being four inches long, and each stove having a sheet iron radiator, were placed one at each end of a car sixty feet long with the following result: —

Experiment No. 1.

Stoves put in and lighted, —

9.55 A.M.	Outside temperature,	38.3
	Average temperature in car,	42.4
11.30 A.M.	Outside temperature,	39.2
	Average inside,	61.9
12.10 P.M.	Outside temperature,	39.2
	Average inside,	63.2
1.05 P.M.	Outside temperature,	39.2
	Average inside,	67.4

The fire was then extinguished and another observation taken at

3.45 P.M.	Outside temperature,	36.5
	Average inside,	52.7

Experiment No. 2.

Same arrangements except that the radiators were not used.

March 14. — Fire started, —

10.05 A.M.	Outside temperature,	36.5
	Average inside,	35.9
11.30 A.M.	Outside temperature,	35.6
	Average inside,	50.0
12.30 P.M.	Outside temperature,	36.5
	Average inside,	53.2
2.30 P.M.	Outside temperature,	36.5
	Average inside,	56.4
4.30 P.M.	Outside temperature,	37.4
	Average inside,	56.6

This experiment indicates the importance of the radiators.

Experiment No. 3.

In this experiment an extra three-burner stove was used in addition to the other two, all being provided with radiators. The following are the results: —

March 17. — Fire started, —

10.45 A.M.	Temperature outside,	33.8
	Average inside,	45.8
11.45 A.M.	Outside temperature,	33.8
	Average inside,	57.2
1.30 P.M.	Outside temperature,	34.7
	Average inside,	63.8
2.15 P.M.	Outside temperature,	35.6
	Average inside,	65.6

The experiments with oil stoves were therefore not encouraging. The odor, also, would be objectionable, if they were not properly trimmed.

Individual Heaters.

These hardly come within the scope of this report, as the object has been to examine the methods of heating cars by the use of steam taken from the locomotive, and not by means of fires in the cars. Nevertheless, they come in incidentally, to some extent, for the following reasons: —

1. Some of the steam-heating systems, notably the Wilder, and the jet system, used on the New York & New England, involve the use of the Baker heaters.

2. Another proposition is, to attach to the system an individual heater which could be used in case of an emergency.

PLATE 1

MARCH 19. 1883. A. H TWOMBLY.

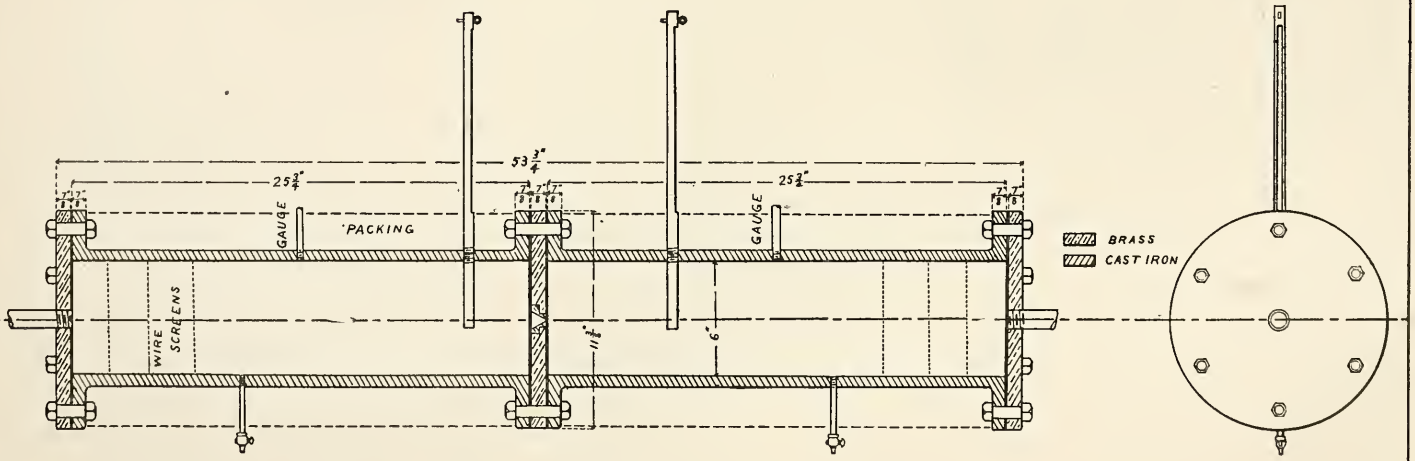


PLATE 2.

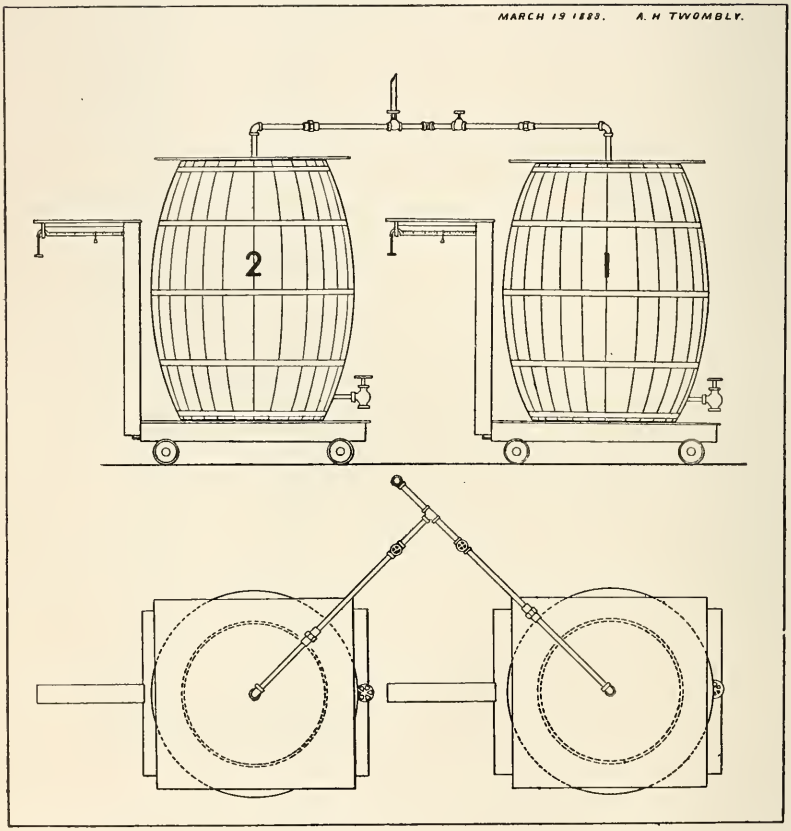
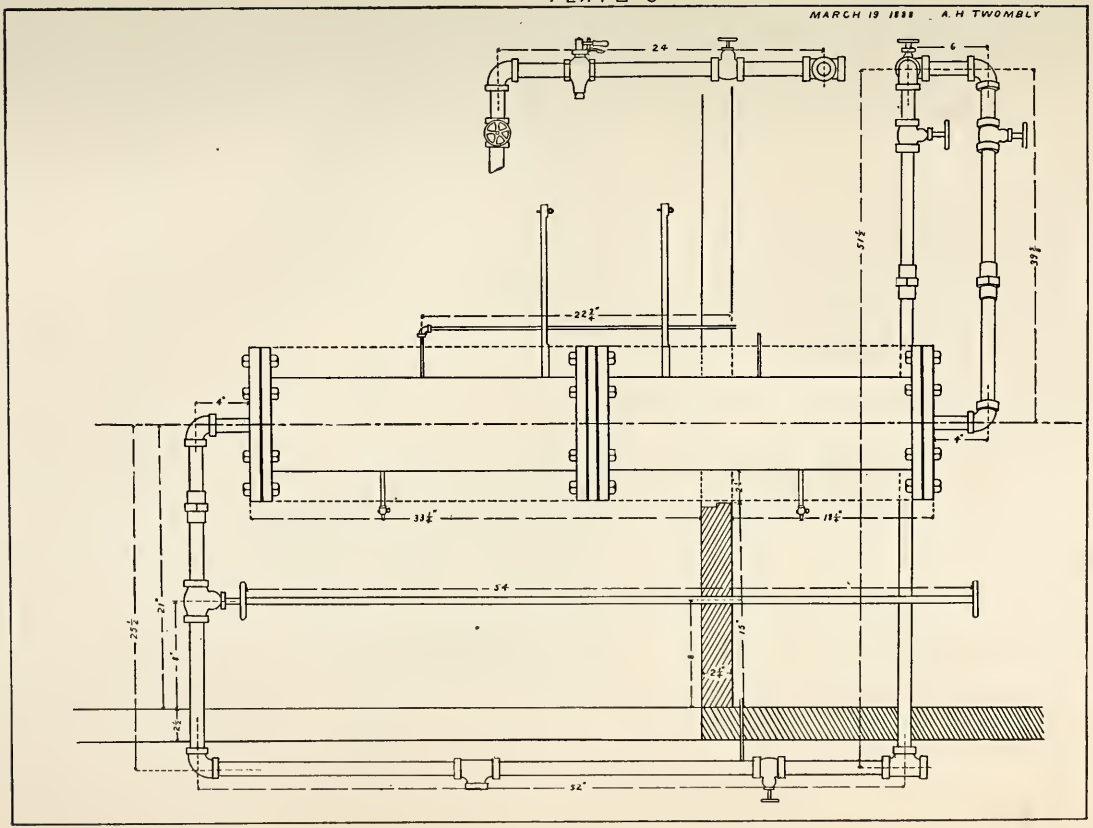


PLATE 3


MARCH 19 1888 A. H TWOMBLY
24
6
51½
39½
22½
4
33¼
19¼
54
21
1
25½
13
52

In the former case, whether the heat is derived from the locomotive or from the heater, a hot-water circulation is used to do the heating. Moreover, in this case, the heating up of the cars is generally done by building a fire in the heater and letting it die out just before starting. This, of course, involves the liability, if there is any carelessness on the part of the employees, of starting out with fire in the cars. Moreover, if fire is not kept in the heater all the time when the cars are in the shed there is danger of the water freezing, and hence of bursting the pipes.

On the other hand, the second system is one which involves the use of steam, and not of water for heating. Hence the heater in the car is not used as a rule; the only occasions when it is used being during a blizzard, when the cars are snow bound and detached for some reason or other from the locomotive. This is an important item to provide for in the West, where such things are of frequent occurrence. On eastern roads, however, such an emergency so rarely occurs that it is questionable whether it would be worth while to make provision for it. Of course, if there are no individual heaters, it would be the duty of the locomotive to stay with its train when caught in a snow-drift. In order to insure a supply of coal it has been suggested that the heater should be of such a kind that the coal burned on the locomotive could be used in it.

If a heater is used there would be much less danger in using an open than in using a closed circulation, for the latter is liable to produce a heavy pressure on the pipes and perhaps lead to an explosion.

Amount of Steam used in Heating Cars.

There are all sorts of opinions and statements in regard to the amount of steam taken from the locomotive to do the heating. Some claim that the steam cannot be spared, and that the engine cannot make her time if called on for this extra duty, and others that it makes no perceptible difference in the running of the locomotive. Some even go so far as to say that all the steam required for heating can be furnished through a hole in the boiler no larger than a pinhole. That neither extreme is correct is shown by the following experiments. It did not seem to be worth while to undertake any very precise work to compare the amount of steam used, when this, that or the other appliance is used, or this, that or the other size, or amount of pipe, for it does not seem that, in the present stage of development of steam-heating, such information is required.

The winter was so far advanced when the investigation began that there was not sufficient time to perform the work in such manner

as to obtain indications as to the effect of each appliance upon the amount of steam used, and, moreover, at the beginning it was not at all certain whether the amount of steam used would form an element of any importance in the question.

Such an investigation would have involved some very careful work in getting the same conditions of temperature outside and inside of the cars, and also in studying the effect of the wind. Other conditions also would have been required, which would have been at best difficult to obtain, and which could only have been obtained, if at all, with an empty train, and, if this were used, the results would not be those of practice.

The attempt, therefore, has been made to obtain as nearly as may be the amount of steam used in an ordinary run in cold weather, leaving the train hands to manage the heating, as they usually do, which means that the cars are sometimes too hot and sometimes too cool, but generally somewhere near right. It also means that if they become too hot they will be cooled off, either by shutting off steam or by opening ventilators or windows.

In view of all the above, the problem has been to determine, approximately, the amount of steam used with sufficient exactness to show whether it is likely to be a serious tax upon the locomotive. The apparatus used consisted of two lengths of six-inch flange pipe, as shown in the tracing, bolted together with a brass disk between them, — this disk containing a two-inch hole, into which is screwed a nicely-made circular orifice. The steam enters the apparatus at one end and passes through the orifice, and then from the other end of the apparatus it passes into the main train pipe. The pressures in the different parts are regulated by two globe valves, — the first controlling the admission of the steam to the apparatus, and the second placed just beyond the apparatus to control its pressure on the train, so as to make it correspond to that ordinarily used. The pressures on each side of the orifice were shown by test gauges, and these and also the boiler gauge were read every five minutes during the run. Afterwards, when the engine was in the round-house, the same conditions were repeated as nearly as possible, with the following exceptions: —

Instead of delivering the steam into the train pipe it was delivered into a short pipe with another globe valve, which regulated its pressure in this pipe to correspond with the pressure on the train. The prolongation of this pipe extended into a barrel partly full of cold water, where it was condensed and weighed. The steam for the train being taken from the dome it was assumed to be dry. At any rate it did not seem to be worth while, at that stage of the problem, to test it with a calorimeter.

The steam was taken from the combination from which proceed all the pipes that take steam from the locomotive except the dry pipe. It is probable that the results were somewhat affected by the current in each of these pipes, which was, of course, more or less irregular; but these irregularities are precisely those which occurred on the run.

A description of the experiments and the averages of the results are given, and some comments made upon them.

The boat train on the Old Colony road and its locomotive, which Mr. Lauder kindly consented to have used for the experiment, was at the time running with four steam-heated cars, viz.: a combination baggage and second-class car, a smoker and two passenger cars, all fitted with the Sewall system, including the Sewall coupling and the new Sewall valve. There are two other passenger cars which are fitted with steam-heating apparatus, but they are only used in the busy season.

The four cars stated above are first heated up by the engine, which is generally attached about 3 P.M. The train leaves the yard at 5.10 P.M., reaches the depot at about 5.30 P.M., where it remains without the engine for half an hour, and starts at 6 P.M. for Fall River, arriving there about 7.20 P.M.

There are, therefore, four cars in line during the heating up. When the train leaves the depot, however, two baggage cars are placed between the combination car and the engine. One of these cars is a platform, and the other a box, car. They are not heated by steam, but each has a steam pipe passing underneath, so that the steam has to pass through this pipe the length of these two cars before entering the four steam-heated cars. The preliminary experiment to determine the size of orifice required in our apparatus was made on Feb. 28, 1888.

An orifice one-eighth inch diameter was put in, and on trying to heat up the cars in the afternoon, by letting the steam pass through this orifice, it soon became evident that they could not be heated in any reasonable time, if at all, so the apparatus was cut out of the circuit, and the train was heated up in the usual way.

The experiment was then made to see if the one-eighth inch orifice would be large enough to use on the run; but as forty pounds pressure was needed on the train pipe in the cab, and as it was not possible to get more than five by the use of that orifice, it was demonstrated that an orifice one-eighth inch diameter was too small for the four cars. Next, a one-half inch orifice was substituted for the one-eighth inch, and this worked all right. It was none too large; and it is probable that if the experiment had been made with six cars, with the thermometer below zero, a larger orifice yet would have been needed. As it was, the one-half inch orifice was used in all the tests. The results are as follows: —

February 29. Heating up Cars in Shed. Four Cars in Line.

Pressure on train pipe in the cab,	40.00 lbs.
Let on steam,	3.08 "
Steam through main pipe,	3.12 "
Condensation through first car,	3.15 "
" " second car,	3.21 "
" " third car,	3.30 "
" " fourth car,	3.52 "

The temperatures were as follows: —

Hour.	First Car.		Second Car.	Third Car.	Fourth Car.	Outside.
	Baggage Section.	Second-class Section.				
3.00	45	45	37	37	37	31
3.15	45	46	–	–	–	–
3.30	57	63	50	45	36	30
4.00	63	70	63	60	54	30
4.15	66	77	68	66	61	30
4.30	66	81	72	71	65	30

The last car reached a required temperature of sixty-seven and a half degrees at 4.34. The pressures in the cab were as follows during this time: —

Average boiler pressure,	152.8 lbs.
Pressure on first part of apparatus,	100 "
Average pressure on second part,	90 "
Pressure on train pipe in cab,	40 "

In the round-house two experiments were made, repeating as nearly as possible the above conditions, and the average result was, that the steam condensed in one hour twenty-six minutes, being the time consumed in heating up the train; weighed 386 pounds.

Experiment No. 2.

Trip, Boston to Fall River (four steam-heated cars), Feb. 29, 1888.

Time of starting,	6 P.M.
Reached Fall River,	7.25 P.M.
Time of run,	1 h. 25 m.
Average boiler pressure,	157.6 lbs.
Pressure on train pipe in cab,	40 "

Average temperature outside,	27°
" " of baggage car,	52°
" " of second-class car,	67°
" " of smoker,	69°
" " of third-class car,	71°
" " of fourth-class car,	66°
" " of smoker and passenger cars,	69°

The average of the round-house tests gave 474 pounds of steam in one hour and twenty-five minutes, which was equivalent to 334 pounds per hour. During the trip a number of the ventilators were open.

Experiment No. 3.

Trip, Fall River to Boston (four steam-heated cars), March 1, 1888.

Time of starting,	5.35 A.M.
Reached Boston,	7 A.M.
Time of run,	1 h. 25 m.
Average boiler pressure,	157.6 lbs.
Pressure on train pipe in cab,	40 lbs.
Average temperature outside,	27°
" " of baggage car,	52°
" " of second-class car,	67°
" " smoker,	68°
" " third-class car,	70°
" " fourth-class car,	66°
" " smoker and passenger car,	68°

The average of the round-house tests gave 434 pounds of steam in one hour and twenty-five minutes, which is equivalent to 306 per hour.

The ventilators were not open as much as on the evening of the 29th of February.

Experiment No. 4.

Trip, Boston to Fall River (five steam-heated cars), March 5, 1888.

Time of starting,	6 P.M.
Reached Fall River,	7.17 P.M.
Time of run,	1 h. 17 m.
Average boiler pressure,	159.7 lbs.
Pressure on train pipe in cab,	40 lbs.
Average temperature outside,	30°
" " baggage car,	57°
" " second class,	67°
" " smoker,	63°
" " third class,	66°
" " fourth class,	64°
" " fifth class,	66°
" " in smoker and passenger car,	65°

The average of the round-house tests gave 419 pounds in one hour and seventeen minutes, or 326 pounds per hour. This is not very much more than was used with four cars on the other trips, but the weather was warmer and the cars were not as well heated.

Experiment No. 5.

Fall River to Boston (five steam-heated cars), March 6, 1888.

Time of starting,	5.20 A.M.
Reached Boston,	6.50 A.M.
Time of run,	1 h. 30 m.
Average boiler pressure,	158.2 lbs.
Pressure on train pipe in cab,	40 lbs.
Minimum temperature outside,	14°
Average temperature outside,	19°
" " baggage car,	53°
" " smoker,	61°
" " third car,	70°
" " fourth car,	67°
" " fifth car,	65°
" " in smoker and passenger car,	67°

The average of the round-house tests gave 570 pounds of water in one hour and thirty minutes, or 380 pounds per hour.

It is to be observed, also, that the last two cars were not really warm enough; their temperatures on arriving in Boston were sixty-six degrees and fifty-seven degrees respectively, which shows that more than forty pounds pressure on the train pipe in the cab was needed. This was not done because the electric apparatus for signalling to the cab was out of order.

Summary.

The amounts used per hour in the four trips were as follows: —

First trip, 4 cars thoroughly heated,	334 lbs.	27° outside.
Second trip, 4 cars well heated,	306 "	27° "
Third trip, 5 cars insufficiently heated,	326 "	30°. "
Fourth trip, 5 cars poorly heated,	380 "	19° "

The experiments, though not made with an extreme degree of accuracy, nevertheless give the results to be expected in practice with steam-heated cars fitted up like those experimented upon with a sufficient degree of approximation to justify an opinion as to the tax upon the power of the locomotive, and they indicate that the amount of steam required is by no means inappreciable, and, on the other hand, that this amount is not, as a rule, a serious tax upon the locomotive, especially in view of the fact that at the time when steam heating is most needed, i. e., in the coldest weather, the travel on most roads is light.

Experience of the Roads.

The roads which have been visited are: —

1. Boston & Albany.
2. Old Colony.
3. New York & New England.
4. Boston & Providence.
5. Fitchburg.
6. Connecticut River.
7. Providence & Worcester.
8. Boston, Revere Beach & Lynn.
9. Atchison, Topeka & Santa Fe.

Boston & Albany. — This road has been using nominally the Martin system, the main pipe being one and one-half inches diameter and under the middle of the car; the radiating pipes being two inches diameter, two rows (i. e., one main and one return) on each side of the car, and spurs under most of the seats. The valve connecting the main pipe with the train is a three-way plug cock. The condensation of each car is disposed of separately, by a trap of the thermostatic type.

The road has been using a number of Martin couplings, but they leak badly. The Westinghouse one and one-half inch air-brake coupling has also been used with good success. At first, soft rubber gaskets were tried, but now hard rubber gaskets are used. The Curtis reducing valve has been used, but it gets out of order, and then lets high-pressure steam into the train.

The Mason valve is now being tried, but has not been used long enough to test it thoroughly. It has been put on an engine where the pressure was only 130 pounds, and there it has worked well, up to date.

One hundred and forty cars and fifty-four engines have been equipped with steam-heating appliances, and trains of eight cars have been heated in this manner.

The stations at Boston and South Framingham are piped from stationary boilers, and at Springfield a special locomotive is detailed for this service. Some traps have frozen up, but the trouble from this cause has not been serious.

On a train of four steam-heated cars the pressure on the train pipe in the cab was found to be twenty pounds, that in the rear car was eight pounds, the temperature outside being twenty-three degrees Fahrenheit; the cars were sufficiently warm. The precaution is always taken to open wide the Martin trap when the cars stop at a terminus. The mode of heating up is to shut off all the cars and let steam through the main pipe till the condensation is cleared out of it, then the radiators are opened successively, beginning with the rear car.

Old Colony. — On this road six cars of the boat train have been fitted up with the Sewall system, including his new valve, and have run on that train during the winter. A main pipe has also been placed under two other cars, one a platform car and one a baggage car, which are always placed on the train next the engine, so that the steam has to pass through the main pipe the length of these two cars before reaching the cars to be heated. These six cars are, one combination baggage and second-class car, one smoker, and four passenger cars. Of these, two of the passenger cars have been used but little, so that generally the train consists of four steam-heated cars.

Seven locomotives have been fitted for steam heating. This has been done so that there should never be any danger of having the boat train cold. All the seven locomotives were at first equipped with Curtis valves; one of them failed, and it was replaced by a Mason valve, which also got out of order.

The traps have nearly all been taken off and globe valves substituted, and they work better than the traps. It requires at least two hours to heat up a train of six cars from zero degrees. The heating up is accomplished as follows: First shut off all the cars and let steam through the main pipe, then begin with the car nearest the engine and get the condensation through that, then open the next car and so on.

One of the chief difficulties met with on this road is the fact that there are no less than thirty-eight stations where they leave cars in the cold, the number of cars left at any one being from two to twenty. If continuous heating were introduced, probably a large number of these would have to be piped up with a stationary boiler or the equivalent.

In heating up the train from forty to eighty pounds pressure is used on the train pipe in the cab, and in running with four cars about forty pounds pressure is generally used on the train pipe in the cab, while if it is very cold sixty pounds is used. The experiments for weighing steam having been made on this road, the working of the system has been examined pretty fully.

In one case the elbows in the pipes connecting the main pipe with the cars were found to have burst, probably by freezing. This car had a trap which probably did not drain.

The Sewall coupling is used and it is generally tight; but occasionally, when going round a curve, it pulls out and leaks, and then gravity is not able of itself to close it, so that it has to be punched in order to secure tightness.

New York & New England. — On the New York & New England road there are twenty-seven steam-heated cars; three of them

are fitted with the Sewall system with the old style valve, and the remaining twenty-four are fitted with the Safety system. Of these twenty-four, eleven are fitted with the jet system.

On all the cars the Westinghouse air-brake coupling with a hard rubber gasket is used, instead of a soft rubber one, and these couplings have worked uniformly well. The valve used in the cab is not a reducing valve but simply an ordinary globe valve.

In the Sewall cars each car is drained separately, and in two of them the Sewall trap has been replaced by one of the thermostatic type made by Mr. Henney, the superintendent of motive power of the road. The main pipe for both these and the Safety cars is one and one-fourth inch, and Mr. Henney considers this size large enough and finds no difficulty in realizing a good portion of the pressure in the rear car of six or seven.

In the case of the Safety cars (not the jet system) he stated that with the steam in the coil and the water in the drum he did not succeed in obtaining a circulation, as the current of water was short circuited. He then changed and put the water in the coil and the steam in the drum, and now has no difficulty.

In the case of the cars fitted with the jet system, where a jet of steam is forced into a water pipe near the Baker heater, an overflow has to be attached to the drum of the heater, which drains off enough water to make up for the steam added, and this overflow must be left open, thus giving an open circulation; but there is a valve in this overflow pipe which can be closed when steam is not on and it is desired to run the heater under pressure by means of a fire. Mr. Henney is now putting his main pipes inside the car on one side, and the overflow of the heater drum forms his trap. Hence, he may be said to have both main pipe and trap inside the car, in the case of the jet system cars.

On the other hand, in the case of all the Safety system cars, the heating up is practically done by means of fire in the heaters, and indeed fire is kept burning in these at all times when the locomotive is not attached, but is allowed to die down and is dumped just before starting.

The following experience is instructive: On a very cold day the locomotive was put on to heat a train at 8 A. M. The traps were at that time all frozen up. The train started at 8.30 A. M. The train consisted of a baggage car, smoker and one passenger car, all fitted with the Sewall system, while the other cars were heated by Baker heaters. The baggage car had a thermostatic trap, while the other two had the Sewall trap, and these two were both frozen up on starting. The cars were naturally cold on starting. The temperature of

the smoker reached sixty-six degrees by 10.20 A. M., and the passenger car was still longer in heating up.

No reducing valve has thus far been used, but one of the piston variety is soon to be tried.

Boston & Providence. — On this road the Sewall and the Gold systems and a system of Mr. Richards, the master mechanic of the road, are being used and various experiments are being tried. The Sewall couplings are used throughout. The Ross and the Curtis reducing valves have been tried and failures have been experienced with each. The Mason valve was also tried for a short time, and in one instance failed, owing to the valve getting clogged up with dirt. Mr. Richards has also been trying to get up a valve made by means of two pistons, but thus far he has been using it mainly to fix the maximum pressure in connection with a throttle valve to regulate the pressure. The trouble he has had with the Ross and the Curtis valves has been that they get out of order on account of the delicacy of the parts. He has used a great variety of traps and has had them all freeze up, and he is now adding a valve to drain the water and to enable the trap to be thawed out.

In heating six cars in zero weather on the run, Mr. Richards' aim is to limit the maximum pressure to forty pounds pressure in the cab.

Mr. Richards' system is peculiar, mainly in the piping. The main steam pipe goes inside the car, near the floor in passenger cars and overhead in baggage cars. This main steam pipe forms one of three pipes of the radiator. There are two cross overs, the traps being in these cross overs. By another system which he has tried a branch of the main pipe passes on each side of the car, and there are four radiators in each car, the traps being at the middle of the length of the car.

The following record was made on a train to Providence where there were, 1st, baggage car, 2d, smoker, both having Mr. Richards' system, 3d, passenger car, having also steam heat when it could get it, but on this occasion having a fire in a stove. The train started at 9.45 A. M. The locomotive had been on since 9 A. M. Sewall traps were all frozen when the steam was let on. There was one Curtis trap which was not frozen on this occasion. Temperature of smoker at starting was forty-seven degrees and of passenger car fifty-five degrees; at 9.55, smoker fifty degrees, of passenger car fifty-seven degrees.

The company has in use about twenty Curtis reducing valves and two Mason, but recourse is had to throttling a good deal.

There are about fifty Gold, forty Sewall and twenty Richards' baggage and passenger cars equipped with steam heat. At one

examination there were forty pounds in the cab as far as Mansfield, and then twenty to twenty-five pounds. After passing Mansfield the third or passenger car showed seven pounds on the gauge.

In the case of the Gold system cars it took a long time to heat the train.

Fitchburg Railroad. — The Sewall system is being used on a number of cars, with the following peculiarities: —

1. No reducing valve is used, but only a throttle. 2. No traps are used, but only globe valves. 3. Near each end of the main pipe is a plug cock, by means of which the steam can be shut into the car to keep the car warm while standing. Some of the Sewall cars are piped with one and one-quarter inch pipe while others have, in part, one-inch pipe. As far as inquiry and observation went, it seemed that there was much more difficulty in heating those that had the one-inch pipe than those that had one and one-quarter inch pipe. In cold weather about sixty-five pounds pressure in the cab is carried. The engineers and train hands do not like the Sewall couplings because they leak whenever they get twisted in going around curves, etc.

Connecticut River Road. — This road may be said to be the pioneer in heating cars by steam from the locomotive, having had it in operation since 1881. They have in all forty-five cars, of which twenty-seven are heated by steam heat. They use what is called the Emerson system. The piping consists of two rows of two-inch pipes on each side of the car with spurs or U's under each seat, thus being just like the Martin piping. No reducing valve is used and no traps. As to couplings, they use three different ones indiscriminately, all made by some of their own people, — either the Emerson, the Hitchcock or the Barrett, all of which seem to be reasonably tight, the two last have gaskets while the first has metallic surfaces coming together. None of them uncouple automatically when the cars break apart.

In the globe valve, under the car, there is a very small hole (one-thirty-second of an inch) above the valve to take care of the drip while running, and when that is not enough the valve is opened a little.

Different reducing valves have been tried, and examination was made of one which had been working three months. It had got out of order so that a throttle was resorted to, and it was used as a safety valve only. The valve was subsequently taken off and repaired, and it was found that the difficulty was due to dirt getting into some of its delicate parts. In this case it was a Mason valve. There is a stationary boiler at Springfield and cars are heated there by that means, while at Northampton a switching-engine is used for heating.

As a rule only three cars are heated in line, though every Saturday a train is sent out with six cars and no trouble has been experienced with them. On a trip on a train of two cars from Springfield to Northampton and back, the temperature outside at Springfield being three degrees below zero, the cars were quite warm.

Only two cars on this line are fitted up with auxiliary boilers under the cars, and they are only used when the cars are left at a station where there is no means of heating them otherwise.

Providence & Worcester. — On this road the Martin system is used on some cars and the Sewall system on others, and very good success has been experienced with everything. The cars at the Providence end of the route are heated by a stationary boiler, and at Worcester by a locomotive. A tank, holding about twenty-seven gallons, is carried under the trap under each car to catch the drip so that it shall not fall on the platforms and freeze, thus forming slippery places at the stations.

Boston, Revere Beach & Lynn. — This is a narrow gauge road and the cars are very nicely fitted up with steam-heating arrangements devised by the superintendent, Mr. C. A. Hammond. The coupling used is one especially devised by Mr. Hammond and seems to serve its purpose well. The two parts of the couplings are not duplicates, and on this road it is not important that they should be, inasmuch as the cars are never turned round. Of course uniformity with other standard gauge roads in the matter of the coupling is not at all necessary on a narrow gauge road.

The piping used is just like that of the Emerson or of the Martin system except that there are no spurs under the seats. The main pipe is outside of and under the car and on one side. No reducing valve is used, but merely a throttle valve, and also a safety valve to warn the engineer if the train pressure becomes too high.

Only two cases of frozen traps have been reported during the winter as the necessary arrangements have been provided to keep the cars warm at all times, whether running or idle. At Boston there is a stationary boiler and the necessary piping, and at Lynn one of the locomotives is used instead of a stationary boiler.

The Curtis trap is used and has worked well.

There are in each car about 125 square feet of heating surface to about 3,000 cubic feet of car or 1 : 24.

A complete record of the temperatures of the cars on all trips and also of all their mishaps is kept. The greater part of the mishaps seem to be from parting of hose. Twenty-three cars in all are fitted with steam heat.

Atchison, Topeka & Santa Fe. — In accordance with the directions of the Board, a trip to Chicago was made to examine the system on trial on the Atchison, Topeka & Santa Fe Railroad. Nearly two days were spent with Mr. George A. Houston, who showed me every courtesy and gave me the opportunity to examine everything in the fullest possible manner. He himself was commissioned by the road about a year ago to examine all the systems of heating cars by steam then in use or proposed, and then to devise a system that should be the best for their purposes. He was given full freedom to experiment as much as he desired, and, as a result, he has been making a great variety of experiments during the last year, and he showed all that he is now using, and also what changes he is making in the cars now being fitted up. At the time of my visit he had heated only three cars in a line at most, but was fitting up a large number with steam heating arrangements. Most of his devices have already been described at different places in the body of this report, and attention has been called to his mode of getting rid of the water of condensation, which is in my opinion the feature of special excellence in his system; but it may be well to summarize in a few words what he has done and is doing.

Thus far he has been using exhaust steam when the engine is running and live steam when it is standing still, and always using live steam for heating up. He states that he has had no difficulty in heating up three cars and keeping them warm in the very coldest weather in that region.

The mode of disposing of the condensation has been already described. He intends that the tank into which the water is to drain should form the shell of a heater in which fire can be made whenever from any cause the locomotive is obliged to leave the train for any length of time, as may happen in a Western blizzard.

He has also a scheme for heating the cars in moderate weather, when it is only necessary to raise their temperature ten degrees or thereabouts, but this had not been put into operation.

When the automatic valve (referred to before) was inside the smoke chamber, some trouble was experienced with grease which clogged it up, but it is now placed outside where it can be opened and cleaned at any time.

The result of all these experiments will undoubtedly be a more extended use of continuous heating during the coming winter, and a general improvement in the appliances and in the management of the apparatus. The roads will profit by their own experience, and it is to be hoped that this report will help them to profit by the experience of others. The following conclusions may fairly be drawn from what has been done: —

It is very important that there should be uniformity in couplers. The Westinghouse air-brake one and one-half inch coupling, with a hard rubber gasket, works satisfactorily, railroad employees are familiar with its use, and the patent upon it expires shortly.

In regard to everything else, uniformity is not so imperative.

The main pipe should be as well protected as possible. If it must be outside the car it should be thoroughly wrapped. A better place for it is between the sills, and in that place, also, it should be wrapped, or it may be placed inside the car, as is done to some extent by Mr. Richards of the Boston & Providence Railroad and by Mr. Henney of the New York & New England Railroad.

The main pipe, the valves connecting this with the radiating pipes, and the entire system of radiating pipes should be such as to offer the least possible resistance to the flow of the steam, so that high-steam pressure shall not be required on the train. A two-inch or at least a one and one-half inch pipe is desirable to meet this requirement.

A reducing valve which is not liable to get out of order and let high pressure on the cars is a great desideratum.

The amount of radiating surface generally adopted, and which seems to be sufficient, is about one square foot for each twenty-five cubic feet of capacity of the car.

The trap should be protected from freezing, and the best way is to have it inside the car. The trap introduced by Mr. George A. Houston on the Atchison, Topeka & Santa Fe is recommended for examination and trial.

It seems probable that auxiliary boilers under the cars can be dispensed with in this State.

Stations where cars are left should generally be provided with a stationary boiler and pipes for heating the cars.

The amount of steam required is neither excessive nor inappreciable. Nevertheless, the question of economy will be an important element in deciding upon the nature of the appliances to be used when it is desired to heat trains of ten or twelve cars. As a rule the time when the most steam is needed for heating is the very time when travel is the lightest and hence when the steam can best be spared.

It is desirable that there should be some automatic device for regulating the heat.

The above is respectfully submitted,

GAETANO LANZA.

Boston, March 30, 1888.

OUTFIT OF PASSENGER AND BAGGAGE CARS IN RESPECT TO HEATING AND LIGHTING.

Boston & Albany Railroad Company.
General Manager's Office,
Boston, Dec. 15, 1888.

W. A. Crafts, Esq., *Clerk Board of Railroad Commissioners, Boston.*

Dear Sir: — In reply to your circular of December 10, requesting a statement of the present outfit of passenger and baggage cars in respect to heating and lighting, the following is submitted: —

With steam heat complete, —		
Passenger, sleeping and drawing-room cars, ...	186	
Baggage, mail and express, ...	40	
		226
Main steam-pipe under car and heated by Johnson & Baker heater, —		
Passenger, sleeping and drawing-room cars, ...	42	
Baggage, mail and express, ...	9	
		51
Main steam-pipe under car, no heater, —		
Baggage, mail and express, ...		2
Main steam-pipe under car and heated by stoves, —		
Paymaster's cars, ...		2
Baker & Johnson heaters only, —		
Passenger, sleeping and drawing-room cars, ...		33
Stoves only, —		
Allston shop train, ...	2	
Baggage Car No. 41, used on freight train only, and but once a week, ...	1	
		3
		317

With the exception of two trains running between Boston and New York which are lighted by electricity, all of our cars are lighted by lamps, which burn mineral sperm oil of 300° fire test.

Yours truly,

W. H. BARNES,
General Manager.

Boston & Maine Railroad.
General Manager's Office,
Boston, Dec. 11, 1888.

Wm. A. Crafts, Esq., *Clerk Board of Railroad Commissioners, Boston, Mass.*

Dear Sir: — Your circular of December 10 is received, and, referring to the same, will say that this road has now fitted 8 passenger

cars, 2 combination cars and 1 mail car with the Sewall heating apparatus for warming cars by steam from the locomotive.

We are still at work upon our cars, and shall get as many more equipped as Mr. Sewall is able to equip between now and the last of January.

Yours truly,

JAS. T. FURBER,
General Manager.

CHESHIRE RAILROAD COMPANY.
OFFICE OF GENERAL MANAGER,
KEENE, N. H., Dec. 15, 1888.

Messrs. Railroad Commissioners of Massachusetts.

In reply to your circular of 10th inst. I have to say we have cars heated as follows, viz. : —

Five passenger cars with Sewall system from engine ; 2 postal cars with Sewall system from engine ; 2 baggage cars with Sewall system from engine ; 19 passenger cars with wood stoves ; 3 passenger cars (coal), Spear heaters ; 2 baggage cars (coal), Railway King stove ; 7 baggage cars, wood stoves.

We expect to continue to pipe for Sewall steam system.

Very truly yours,

R. STEWART,
General Manager.

CONNECTICUT RIVER RAILROAD COMPANY.
PRESIDENT'S OFFICE,
SPRINGFIELD, MASS., Dec. 27, 1888.

To the Board of Railroad Commissioners.

GENTLEMEN : — Our delay in replying to your circular of December 10 was due to a misunderstanding on the part of our employees. I send you a report made to me, which shows that, of the passenger cars, out of a total number of 34, there are equipped for steam heat (Emerson's system) 22 ; of the combination and baggage cars, out of a total of 18, there are equipped for steam heat 12 ; of the passenger cars, with stoves exclusively, 8 ; cars without stoves or steam heat, not used in the winter, 4 ; combination cars, with stoves exclusively, 6.

In some of these cars heated by steam, the old stoves are left, to be used if necessary, especially on those cars which are run daily into Northern Vermont and New Hampshire.

Of the 52 passenger and combination cars, there are supplied with electric lighting, 8 ; with lamps, 44.

Truly yours,

N. A. LEONARD, *President.*

Fitchburg Railroad, Hoosac Tunnel Route.
General Superintendent's Office,
Boston, Mass., Dec. 18, 1888.

Wm. A. Crafts, Esq., *Clerk Board of Railroad Commissioners, Boston, Mass.*

Dear Sir: — In reply to yours of December 10, would say that we have 73 passenger and combination cars equipped with the Sewall system complete; 22 baggage cars piped so that steam can be used in any cars behind. One of these is arranged to be heated with steam.

We have experimented some in lighting cars by electricity, but have not succeeded in making it a success. For lighting we use 300 test oil with proper lamps.

Yours truly,

JOHN ADAMS,
General Superintendent.

Housatonic Railroad Company.
Office of Vice-President and General Manager,
Bridgeport, Conn., Dec. 14, 1888.

Board of Railroad Commissioners, 20 Beacon Street, Boston, Mass.

Gentlemen: — Your circular dated December 10, relative to heating and lighting passenger, mail and baggage cars, and requesting a statement of the present outfit of this company, is received. Replying to same, would say, for lighting passenger, mail and baggage cars this company uses 300° mineral sperm oil; for heating all passenger cars, Baker's patent heaters; and for heating all baggage cars, Spear's patent safety heaters.

Yours truly,

WM. H. STEVENSON,
Vice-President and General Manager.

New London Northern Railroad.
Superintendent's Office,
New London, Conn., Dec. 17, 1888.

William A. Crafts, *Clerk, 20 Beacon St., Boston, Mass.*

Dear Sir: — Answering your circular of the 10th, would state that we have 3 passenger cars in service fitted with the Sewall system for steam heat, also 2 baggage or combination cars. We

have 3 warmed with Baker heaters, 2 with Creamer heaters and the balance with wood stoves. We are fitting 2 more passenger cars and 1 baggage or combination car with the Sewall system, and hope to have them in service in a very short time. All are lighted with lamps burning mineral sperm oil.

Yours truly,

C. F. SPAULDING,
Superintendent.

New York & New England Railroad Company.
General Superintendent's Office,
244 Federal Street, Boston, Mass., Dec. 21, 1888.

Honorable Board of Railroad Commissioners, Boston, Mass.

Dear Sirs: — We have heated by direct steam 2 coaches and 7 baggage cars; by hot water and steam, 54 coaches and 1 baggage car, 7 parlor cars, 1 business car, and 2 dining cars; by Baker heater, 1 pay car; leaving us heated by stoves, 119 coaches, 5 baggage cars and 2 milk cars. We have ordered in addition 25 more Baker heaters, which we expect to use in connection with steam from the engine, as rapidly as may be.

Yours respectfully,

A. A. JACKSON,
General Superintendent.

New York, New Haven & Hartford Railroad Company.
General Superintendent's Office,
New Haven, Conn., Dec. 15, 1888.

Wm. A. Crafts, Esq., *Clerk of Board of Railroad Commissioners, No. 20 Beacon Street, Boston, Mass.*

Dear Sir: — In accordance with your circular letter of the 10th inst., I enclose herewith statement showing passenger-car equipment owned and leased by this company Sept. 30, 1888, and method of heating and lighting same.

Yours, etc.,

O. M. SHEPARD,
General Superintendent.

PASSENGER-CAR EQUIPMENT OWNED AND LEASED BY THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD SEPT. 30, 1888, AND METHOD OF HEATING AND LIGHTING THE SAME.

Coaches and smokers heated with Baker & Smith's heater (hot water),	268	
Coaches and smokers heated with Baker's improved heater (hot water),	37	
Coaches and smokers heated with Searle's, — similar to Baker & Smith's (hot water),	1	
Coaches and smokers heated with Gouge heater,	1	
Coaches and smokers heated with Spear's heater,	44	
Coaches and smokers without heater (summer cars, Naugatuck Division),	2	
	—	353
Combination cars heated with Baker & Smith's heater (hot water),	20	
Combination cars heated with Spear heater,	20	
	—	40
Drawing-room cars heated with Baker & Smith's heater (hot water),	26	
Drawing-room cars heated with Baker's improved heater (hot water),	10	
	—	36
Sleeping cars heated with Baker & Smith's heater (hot water),	5	
Sleeping cars heated with Baker's improved heater (hot water),	4	
Special sleeping cars heated with Spear's heater,	1	
	—	10
Dining car heated with Baker & Smith's heater (hot water),		1
Observation car heated with Baker & Smith's heater (hot water),		1
Pay cars heated with Baker & Smith's heater (hot water),	2	
Pay cars heated with Spear's heater,	1	
	—	3
Baggage and mail cars heated with Baker & Smith's heater (hot water),	10	
Baggage and mail cars heated with Spear's heater,	79	
	—	89
		533

Wagners, Shore Line.

Drawing-room cars heated with Baker & Smith's heater (hot water),	16	
Sleeping cars heated with Baker & Smith's heater (hot water),	8	
	—	24

($\frac{3}{10}$ of the above owned by the N. Y., N. H. & H. R. R.)

Boston & New York Shore Line Express Line.

Baggage cars heated with Spear heaters,	9	
Smoking cars heated with Baker & Smith heaters (hot water),	7	
Carried forward,	16	

Brought forward, ...	16	
Postal cars heated with Baker & Smith heaters (hot water), .	2	
Passenger cars heated with Baker & Smith heaters (hot water),	15	
	—	33

($\frac{1}{2}\frac{2}{3}\frac{4}{2}$ of the above owned by the N. Y., N. H. & H. R. R.)

JAMES DENON, *M. C. B.*
O. M. SHEPARD.

PASSENGER-CAR EQUIPMENT OWNED AND LEASED BY THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD SEPT. 30, 1888, AND METHOD OF HEATING AND LIGHTING THE SAME.

Coaches and smokers lighted with oil lamps, ...	352	
Coaches and smokers lighted with gas lamps, ...	1	
	—	353
Combination cars lighted with oil lamps, ...		40
Drawing-room cars lighted with oil lamps, ...		36
Sleeping cars lighted with oil lamps, ...	9	
Sleeping cars (special) lighted with candles, ...	1	
	—	10
Dining car lighted with oil lamps, ...		1
Observation car lighted with oil lamps, ...		1
Pay cars lighted with oil lamps, ...		3
Baggage and mail cars lighted with oil lamps, ...		89
		533

Wagners, Shore Line.

Drawing-room cars lighted with oil lamps, ...	12	
Drawing-room cars lighted with gas lamps, ...	4	
Sleeping cars lighted with oil lamps, ...	8	
	—	24

($\frac{3}{1}\frac{}{0}$ of the above owned by the N. Y., N. H. & H. R. R.)

Boston & New York Shore Line Express Line.

Baggage cars lighted with oil lamps, ...	9	
Smoking cars lighted with oil lamps, ...	7	
Postal cars lighted with oil lamps, ...	2	
Passenger cars lighted with oil lamps, ...	15	
	—	33

($\frac{1}{2}\frac{2}{3}\frac{4}{2}$ of the above owned by the N. Y., N. H. & H. R. R.)

JAMES DENON, *M. C. B.*
O. M. SHEPARD.

OLD COLONY RAILROAD.
OFFICE OF GENERAL MANAGER,
BOSTON, MASS., Dec. 14, 1888.

WM. A. CRAFTS, Esq., *Clerk Board of Railroad Commissioners, Boston, Mass.*

DEAR SIR: — In reply to your circular letter of the 10th inst. I submit the following statement of the present outfit of passenger and baggage cars of this company in respect to heating and lighting: —

	Passenger Cars.	Baggage Cars.	Total.
Hot Water Heaters, —			
Johnson,	243	4	247
Baker,	9	–	9
Thayer,	2	–	2
Standard,	1	–	1
Total number hot water heaters,	255	4	259
Steam from Locomotive, —			
Gold,	72	3	75
Sewall,	50	7	57
Richards,	13	5	18
Total steam from locomotive,	135	15	150
Stoves,	*40	*31	*71
Number of cars not heated,	23	5	28
Total number of cars,	453	55	508

All of the passenger and baggage cars owned and leased by this company are lighted by lamps burning kerosene oil of 300° fire test. Nine cars of Stonington line, owned jointly by the New York, Providence & Boston and Old Colony Railroad Companies, are lighted by gas, the Pintsch system.

Yours truly,

J. R. KENDRICK,
General Manager.

PROVIDENCE & WORCESTER RAILROAD COMPANY.
SUPERINTENDENT'S OFFICE,
PROVIDENCE, R. I., Dec. 14, 1888.

WM. A. CRAFTS, Esq., *Clerk.*

DEAR SIR: — Circular in reference to heating and lighting of cars under date of 10th inst. was duly received, and contents noted.

* Spare cars, but little used.

Our passenger equipments are lighted by lamps in which we burn oil of 300° fire test.

8 passenger cars, ...	Equipped with the Martin system.
10 baggage, mail and express cars, .	
4 passenger cars, ...	Equipped with the Sewall system.
1 combination car, ...	
11 passenger cars, ...	Johnson hot water heater.
6 passenger cars, ...	Spear hot air heater.
21 passenger cars, ...	Chilson stove, cast-iron.
6 baggage and mail cars, . . .	Chilson stove, cast-iron.

I am respectfully yours,

CHARLES HOWARD,
Superintendent.

[J.]

Receipts of Flour in Boston during Ten Years ending September 30.

	Flour — Barrels.									
	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Boston & Albany Railroad,	536,767	462,852	629,355	569,692	699,553	610,673	667,148	520,810	456,161	477,001
Boston & Lowell Railroad,	191,265	236,443	160,704	104,376	133,491	132,825	186,304	119,324	126,891	118,684
Fitchburg Railroad,	478,852	549,354	869,971	777,466	1,268,605	1,514,586	1,172,335	1,747,500	1,662,582	1,137,849
Grand Junction (B. & A. R.R.),	600,184	936,783	911,357	668,133	1,110,564	1,107,960	1,193,323	894,118	1,076,691	946,884
N. Y. & New England R.R.,	89,327	89,542	190,169	227,576	331,391	278,944	101,214	69,011	66,167	178,495
Total by through lines from West,	1,896,395	2,274,974	2,761,556	2,347,243	3,543,604	3,642,788	3,320,324	3,350,763	3,388,492	2,858,913
Boston & Maine Railroad,	42,631	28,361	29,227	13,343	16,126	9,383	1,462	1,431	2,761	1,718
Boston & Providence R.R.,	1,387	4,421	4,241	3,588	5,548	1,876	349	1,091	1,088	1,139
Eastern Railroad,	2,985	6,064	11,335	4,732	9,950	11,776	1,580	–	–	–
Old Colony Railroad,	2,162	4,392	3,646	5,115	4,390	3,218	1,941	3,414	2,199	1,460
Portland Steamer,	182	150	1,893	352	459	187	25	905	298	372
New York Steamer,	120,382	80,125	18,642	2,121	991	6,130	1,857	3,963	6,859	8,559
Baltimore Steamer,	9,364	15,941	16,162	4,907	7,562	21,648	12,574	13,196	19,413	26,120
Philadelphia Steamer,	1,045	1,022	300	1,625	10	1,370	250	274	823	1,000
New Orleans Steamer,	–	697	–	–	225	–	–	–	–	–
Sail-Vessels,	300	400	–	–	1,823	4,937	2,741	135	–	13
Other Sources,										
Total from Seaboard,	180,438	140,573	85,646	35,783	47,084	62,725	22,779	24,409	33,441	40,381
Total from all Sources,	2,076,833	2,418,859	2,853,079	2,383,026	3,590,688	3,705,513	3,343,103	3,375,172	3,421,933	2,899,294

Decrease in 1888, 522,639 barrels, = 15 + per cent.

Receipts of Corn in Boston during Ten Years ending September 30.

	Corn — Bushels.									
	1879.	**1880.**	**1881.**	**1882.**	**1883.**	**1884.**	**1885.**	**1886.**	**1887.**	**1888.**
Boston & Albany Railroad, .	1,006,160	659,467	1,349,388	807,175	927,490	1,041,605	1,603,457	1,380,395	1,385,793	706,070
Boston & Lowell Railroad, .	617,026	3,836,219	794,534	1,355,529	571,595	510,214	408,400	226,370	429,553	595,997
Fitchburg Railroad, . .	3,472,195	2,897,389	3,659,457	2,640,372	4,111,500	3,876,725	3,764,185	4,399,160	2,427,420	2,038,725
Grand Junction (B & A.R.R.),	5,855,850	7,328,338	8,560,384	3,170,842	3,386,291	4,193,700	2,987,880	2,185,400	2,518,400	2,504,550
N. Y. & New England R R., .	23,695	29,060	177,519	329,114	843,554	363,637	38,051	76,551	48,886	258,312
Total by through lines from West, . .	11,014,926	14,750,473	14,541,282	8,303,032	9,840,430	9,985,881	8,801,973	8,267,876	6,810,052	6,103,654
Boston & Maine Railroad, .	144,295	202,752	257,841	255,295	305,077	124,635	6,150	60,386	45,665	6,385
Boston & Providence R.R., .	120	–	–	–	700	800	500	1,170	1,175	–
Eastern Railroad, . . .	11,300	5,700	2,500	7,050	16,270	6,664	1,425	–	–	–
Old Colony Railroad, . .	–	–	–	7,650	5,300	5,450	500	1,100	1,250	–
Portland Steamer, . . .	–	–	–	–	–	–	–	–	–	–
New York Steamer, . .	–	–	–	5,000	–	–	–	–	728	
Baltimore Steamer, . .	6,400	76	–	10,811	15,712	32,942	6,498	4,816	6,687	3,409
Philadelphia Steamer, . .	–	–	–	–	–	–	–	240	–	–
New Orleans Steamer, . .	–	–	–	–	16,444	–	1,500	–	–	–
Sail-Vessels, ... Other Sources, . . .	6,000	–	200	8,000	*72,891	5,416	–	–	19,500	53,885
Total from Seaboard, . .	168,115	208,528	260,541	293,806	432,394	175,907	16,573	67,712	75,005	63,679
Total from all Sources, .	11,183,041	14,959,001	14,801,823	8,596,838	10,272,824	10,161,788	8,818,546	8,335,588	6,885,057	6,167,333

Decrease in 1888, 717,724 bushels, = 10 + per cent.

* Savannah Steamer.

Receipts of Oats in Boston during Ten Years ending September 30.

	Oats — Bushels.									
	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888
Boston & Albany Railroad, .	728,634	604,310	1,094,476	1,411,900	1,332,825	1,754,628	2,170,405	2,179,530	1,663,457	2,161,893
Boston & Lowell Railroad, .	256,548	181,636	201,602	469,327	163,421	78,876	487,889	474,539	610,256	733,150
Fitchburg Railroad, . .	1,828,720	1,994,597	1,751,469	1,615,072	2,734,844	3,124,318	2,877,370	4,695,640	3,572,504	2,762,035
Grand Junction (B. & A. R.R.),	592,235	720,454	633,000	472,450	558,200	702,250	463,700	194,670	217,000	341,000
N. Y. & New England R.R., .	22,600	32,341	46,650	163,000	93,118	85,260	33,722	19,615	98,105	224,378
Total by through lines from West, . .	3,428,787	3,533,338	3,757,197	4,131,749	4,882,408	5,745,332	6,033,086	7,563,994	6,161,322	6,222,456
Boston & Maine Railroad, .	23,350	46,442	21,050	103,875	28,400	5,925	7,575	4,182	1,000	11,860
Boston & Providence R.R., .	–	–	–	–	–	–	–	–	–	–
Eastern Railroad, . . .	5,700	12,950	8,100	138,835	20,005	7,100	400	–	–	–
Old Colony Railroad, . .	–	–	–	2,750	800	3,100	600	2,325	650	–
Portland Steamer, . .	–	–	–	–	–	–	–	–	–	–
New York Steamer, . .	–	–	–	–	–	–	–	–	–	–
Baltimore Steamer, . .	–	–	–	–	–	1,437	–	–	–	–
Philadelphia Steamer, . .	–	–	–	–	–	–	–	–	–	–
New Orleans Steamer, . .	–	–	–	–	–	–	–	–	–	–
Sail-Vessels, ... Other Sources, . . .	–	–	–	–	–	–	2,968	–	–	–
Total from Seaboard, . .	29,050	59,392	29,150	245,460	49,205	17,562	11,543	6,507	1,650	11,860
Total from all Sources, .	3,457,787	3,592,730	3,786,347	4,372,209	4,931,613	5,762,894	6,044,629	7,570,501	6,162,972	6,234,316

Increase in 1888, 71,344 bushels, = .011 per cent.

Receipts of Wheat in Boston during Ten Years ending September 30.

	Wheat—Bushels.									
	1879.	**1880.**	**1881.**	**1882.**	**1883.**	**1884.**	**1885.**	**1886.**	**1887.**	**1888.**
Boston & Albany Railroad, .	174,310	65,691	50,525	28,700	36,005	24,900	91,855	40,919	49,596	41,329
Boston & Lowell Railroad, .	916,431	981,761	337,253	250,641	198,731	94,666	106,968	199,574	69,617	16,054
Fitchburg Railroad, . .	1,306,085	724,743	994,446	918,763	990,289	842,662	1,193,555	730,443	1,713,755	1,135,870
Grand Junction (B. & A. R.R.),	2,753,450	2,436,921	2,832,769	1,458,400	1,037,170	722,100	871,300	1,127,371	1,613,100	502,150
N. Y. & New England R. R., .	7,568	34,232	955	175,400	295,100	103,074	–	121	1,700	7,985
Total by through lines from West, . .	5,157,844	4,243,348	4,215,948	2,831,904	2,557,295	1,787,402	2,263,678	2,098,428	3,447,768	1,703,388
Boston & Maine Railroad, .	27,448	53,522	23,932	37,884	17,957	10,400	–	1,088	600	500
Boston & Providence R. R., .	1,001	102	–	–	10,000	600	–	–	–	–
Eastern Railroad, . . .	–	–	–	800	1,015	1,400	600	–	–	–
Old Colony Railroad, . .	–	–	–	500	–	–	–	–	–	–
Portland Steamer, . . .	–	–	–	–	–	–	–	–	–	–
New York Steamer, . .	–	–	–	–	–	–	–	–	–	–
Baltimore Steamer, . .	–	–	–	–	–	–	–	–	–	–
Philadelphia Steamer, . .	–	–	–	–	–	–	–	–	–	–
New Orleans Steamer, . .	–	–	–	–	–	–	–	–	–	–
Sail-Vessels, ...	–	–	–	–	–	4,500	–	–	–	–
Other Sources, . . .										
Total from Seaboard, . .	28,449	53,624	23,932	39,184	28,972	16,900	600	1,088	600	500
Total from all Sources, .	5,186,293	4,296,972	4,239,880	2,871,088	2,586,267	1,804,302	2,264,278	2,099,516	3,448,368	1,703,888

Decrease in 1888, 1,744,480 bushels, = 50 per cent.

Summary of Grain Receipts in Boston during Ten Years.

	Flour — Barrels.	Corn — Bushels.	Oats — Bushels.	Wheat — Bushels.
1879, . . .	2,076,833	11,183,041	3,457,787	5,186,293
1880, . . .	2,418,859	14,959,001	3,592,730	4,296,972
1881, . . .	2,853,079	14,801,823	3,786,347	4,239,880
1882, . . .	2,383,026	8,596,838	4,377,209	2,871,088
1883, . . .	3,590,688	10,272,824	4,931,613	2,586,267
1884, . . .	3,705,513	10,161,788	5,762,894	1,804,302
1885, . . .	3,343,103	8,818,546	6,044,629	2,264,278
1886, . . .	3,375,172	8,335,588	7,570,501	2,099,516
1887, . . .	3,421,933	6,885,057	6,162,972	3,448,368
1888, . . .	2,899,294	6,167,333	6,234,316	1,703,888

[K.]

Tabular Statement of Accidents reported to the Board of Railroad Commissioners during the Year ending Sept. 30, 1888.

RAILROADS.	General Statement.									Passengers.			
	Whole Number of Persons injured.	Passengers.	Employees.	At Grade Crossings and Stations.	Trespassers.	Children.	Adults.	Killed.	Injured.	By Causes beyond their own Control.		By their own Misconduct or Want of Caution.	
										Killed.	Injured.	Killed.	Injured.
Boston & Albany,	201	12	130	14	45	7	194	50	151	–	1	1	10
Boston & Lowell,	80	3	50	4	23	6	74	12	68	–	–	–	3
Boston & Maine,	191	76	49	24	42	6	185	54	137	11	50	1	14
Boston & Providence,	27	1	9	10	7	3	24	8	19	–	–	–	1
Fitchburg,	88	7	50	9	22	2	86	42	46	1	1	2	3
New York & New England,	100	16	52	11	21	5	95	18	82	–	8	1	7
Old Colony,	53	1	25	5	22	3	50	32	21	–	–	–	1
Cheshire,	–	–	–	–	–	–	–	–	–	–	–	–	–
Connecticut River,	11	1	9	–	1	–	11	11	–	–	–	1	–
Grafton & Upton,	–	–	–	–	–	–	–	–	–	–	–	–	–
New Haven & Northampton,	1	–	1	–	–	–	1	1	–	–	–	–	–
New London Northern,	4	–	3	–	1	–	4	2	2	–	–	–	–

New York, New Haven & Hartford,	7	–	6	–	1	–	7	2	5	–	–	–	–
Providence & Worcester, . .	7	–	2	–	5	1	6	2	5	–	–	–	–
Housatonic, of Connecticut, . .	5	–	2	1	2	–	5	4	1	–	–	–	–
Boston, Revere Beach & Lynn, .	2	–	–	–	2	–	2	2	–	–	–	–	–
Martha's Vineyard, . . .	–	–	–	–	–	–	–	–	–	–	–	–	–
Nantucket, ...	–	–	–	–	–	–	–	–	–	–	–	–	–
Worcester & Shrewsbury, . .	–	–	–	–	–	–	–	–	–	–	–	–	–
Union Freight, ...	5	–	3	–	*2	1	4	4	1	–	–	–	–
	782	117	391	78	196	34	748	244	538	12	†60	6	39

* In street.

† Two were injured by missiles thrown through windows.

Tabular Statement of Accidents, etc. — Continued.

RAILROADS.	Employees.													
	Train-Men.	Other Employees.	By Coupling or Uncoupling Cars.		By Overhead Bridges.		By Train Accidents.		Falling from Cars or Engines.		Various Causes.*		Total Killed.	Total Injured.
			Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		
Boston & Albany,	115	15	1	61	1	3	–	4	9	21	5	25	16	114
Boston & Lowell,	43	7	–	23	–	–	–	3	–	7	3	14	3	47
Boston & Maine,	36	13	2	23	–	1	3	1	–	4	5	10	10	39
Boston & Providence,	5	4	–	2	–	–	1	1	1	1	1	2	3	6
Fitchburg,	40	10	2	15	–	–	5	8	2	2	8	8	17	33
New York & New England,	45	7	–	17	–	3	1	2	2	11	1	15	4	48
Old Colony,	18	7	–	3	–	–	2	3	8	3	2	4	12	13
Cheshire,	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Connecticut River,	5	4	1	–	–	–	–	–	3	–	5	–	9	–
Grafton & Upton,	–	–	–	–	–	–	–	–	–	–	–	–	–	–
New Haven & Northampton,	1	–	–	–	–	–	–	–	1	–	–	–	1	–
New London Northern,	2	1	–	–	–	–	–	–	1	–	–	2	1	2
New York, New Haven & Hartford,	6	–	–	2	–	–	–	1	–	1	1	1	1	5
Providence & Worcester,	2	–	–	–	–	–	–	–	–	2	–	–	–	2

Housatonic, of Connecticut, . .	2	–	–	–	–	–	–	–	1	1	–	–	1	1
Boston, Revere Beach & Lynn, .	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Martha's Vineyard, . . .	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nantucket, ...	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Worcester & Shrewsbury, . .	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Union Freight, ...	3	–	1	1	–	–	–	–	1	–	–	–	2	1
	323	68	7	147	1	7†	12	23	29	53	31	81	80	311

* Stepping incautiously in front of train, 13; standing too near track, 12; injured by falling freight, 8; falling when boarding moving train or engine, 7; slipping under wheels, 6; Run over or bruised while inspecting cars, jumping from cars, falling on top of cars, 5 each; contact with bridge-guard, telegraph pole or signal post, 4; run over by train when shovelling snow, 4; caught between moving trains on opposite tracks, brake giving way, scalded by breaking of flue, 3 each; thrown from snow-plough train, struck by bell cord, injured by train running into paint shop, 2 each; scalded by pop-valve, run over while rescuing another person, struck by train on opposite track while throwing switch, passing between freight cars, run over by dump car, jammed between train and door post, switch-ball falling on foot, struck by foot-board of switching engine, run over in tunnel, falling on track, struck by lever of scraper car, stepping on draw-head, thrown from hand car, etc., 1 each; unknown, 3.

† One by the abutment of a bridge.

Tabular Statement of Accidents, etc. — Concluded.

RAILROADS.	At Grade Crossings.				At Stations.		Trespassers.				
	With gates or flagman.		Without gates or flagman.								
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Unlawfully on Track.	Unlawfully on Cars.	Killed.	Injured.	Apparent Suicide.
Boston & Albany,	4	2	2	4	–	2	28	17	24	21	2
Boston & Lowell,	–	–	1	2	–	1	17	6	9	14	–
Boston & Maine,	5	5	1	2	4	7	36	6	22	20	2
Boston & Providence,	2	6	–	–	2	–	6	1	3	4	–
Fitchburg,	2	6	–	–	1	–	17	5	18	4	1
New York & New England,	–	1	4	4	–	2	20	1	10	11	–
Old Colony,	3	–	2	–	–	–	17	5	17	5	–
Cheshire,	–	–	–	–	–	–	–	–	–	–	–
Connecticut River,	–	–	–	–	–	–	1	–	1	–	–
Grafton & Upton,	–	–	–	–	–	–	–	–	–	–	–
New Haven & Northampton,	–	–	–	–	–	–	–	–	–	–	–
New London Northern,	–	–	–	–	–	–	1	–	1	–	–
New York, New Haven & Hartford,	–	–	–	–	–	–	1	–	1	–	–
Providence & Worcester,	–	–	–	–	–	–	4	1	2	3	–

Housatonic, of Connecticut, .	–	–	1	–	–	–	2	–	2	–	1							
Boston, Revere Beach & Lynn, .	–	–	–	–	–	–	2	–	2	–	1							
Martha's Vineyard, . . .	–	–	–	–	–	–	–	–	–	–	–							
Nantucket, ...	–	–	–	–	–	–	–	–	–	–	–							
Worcester & Shrewsbury, . .	–	–	–	–	–	–	–	–	–	–	–							
Union Freight, . . .	–	–	–	–	–	–	2	–	2	–	–							
	16	20	11	12	7	12	154	42	114	82	7							

Train Accidents reported to the Board of Railroad Commissioners during the Year ending Sept. 30, 1888.

COLLISIONS.	Number.	Persons killed.	Persons injured.
Head.			
Passenger train with another passenger train,	1	1	1
Snow-plough train with another which had been derailed by snow-drift,	1	1	5
Crossing.			
Freight train with construction train moving from side track,	1	1	1
Freight engine on cross-over track with passenger train on main track,	1	–	2
Rear.			
Passenger train with a wild coal train,	1	–	1
Express passenger train with a freight train running off to side track,	1	2	–
Rear portion of a parted freight train with forward part,	1	1	2
Engine with cars on side track,	1	–	2
Express passenger train with freight train stalled in snow,	1	2	3
	9	8	17
DERAILMENTS.			
Passenger train, by breaking of wheel,	1	14	51
Circus train, by low truck rigging striking Wharton switch,	1	–	6
	2	14	57

Tabular Statement of Accidents reported to the Board of Railroad Commissioners during Ten Years.

	General Statement.									Passengers.				Employees.	
	Whole number of Casualties to Persons.	Passengers.	Employees.	At Highway Crossings and Stations.	Trespassers.	Children.	Adults.	Fatal.	Not Fatal.	From Causes beyond their own Control.	From their own Misconduct or Want of Care.	Fatal.	Not Fatal.	Train-Men.	Other Employees.
Year ending Sept. 30, 1879,	405	208	83	32	82	25	380	115	290	186	23	21	188	71	12
" " 1880,	346	24	157	54	111	24	322	146	200	1	23	9	15	113	44
" " 1881,	415	42	200	47	126	23	392	184	231	11	31	15	27	167	33
" " 1882,	414	27	198	57	132	29	385	163	251	4	22	9	15	158	40
" " 1883,	524	61	265	50	147	33	491	191	333	1	24	14	21	192	73
" " 1884,	457	76	182	38	161	33	424	181	276	44	32	14	62	139	43
" " 1885,	517	74	233	55	152	28	486	163	351	12	62	14	60	191	42
" " 1886,	583	107	273	44	159	43	540	201	382	45	62	20	87	212	61
" " 1887,	802	198	357	54	193	38	764	265	537	144	54	37	161	300	57
" " 1888,	782	117	391	78	196	34	748	244	538	72	45	18	99	323	68
Total,	5,245	934	2,339	509	1,459	340	4,932	1853	3,389	520	378	171	735	1,866	473
Average,	524.5	93.4	233.9	50.9	145.9	34.0	493.2	185.3	338.9	52.0	37.8	17.1	73.5	186.6	47.3

Tabular Statement of Accidents, etc., during Ten Years — Concluded.

	Employees — Concluded.							At Highway Crossings.				At Stations.		Trespassers.				
	Coupling or uncoupling Cars.	By Overhead Bridges.	By Train Accidents.	Falling from Train.	Various Causes.	Fatal.	Not Fatal.	With Gates or Flagmen.	Without Gates or Flagmen.	Fatal.	Not Fatal.	Fatal.	Not Fatal.	Walking or lying on Track.	Unlawfully riding on Cars.	Fatal.	Not Fatal.	Suicide.
Year ending Sept. 30, 1879,	25	7	8	24	19	28	55	13	17	13	17	1	1	70	12	54	28	5
" " 1880,	43	12	21	47	34	49	108	20	30	19	31	1	3	93	18	72	40	4
" " 1881,	59	28	18	46	48	72	128	12	24	11	25	5	6	104	22	81	45	3
" " 1882,	60	18	15	43	62	56	142	25	29	21	33	3	–	109	23	75	57	7
" " 1883,	86	14	13	55	97	62	2 3	18	26	15	29	4	2	112	33	93	54	3
" " 1884,	68	12	11	35	56	47	135	19	13	13	19	4	2	126	35	104	57	4
" " 1885,	91	11	19	42	70	29	204	20	30	23	27	1	3	120	32	93	59	3
" " 1886,	107	8	25	55	78	62	211	15	20	22	13	6	3	130	29	91	68	3
" " 1887,	122	10	32	74	119	79	278	17	30	19	28	3	4	158	35	126	67	11
" " 1888,	154	8	35	82	112	80	311	36	23	27	32	7	12	154	42	114	82	4
Total, ...	815	118	197	493	695	564	1,775	195	242	183	254	35	36	1,176	281	922	557	47
Average, . . .	81.5	11.8	19.7	49.3	69.5	56.4	177.5	19.5	24.2	18.3	25.4	3.5	3 6	117.6	28.1	92.2	55.7	4.7

Tabular Statement of Accidents to Employees in Massachusetts during Ten Years.

Year Ending September 30.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	Total.
Injured by coupling cars, ...	25	43	59	60	86	68	91	107	122	154	815
by overhead bridges, . . .	7	12	28	18	14	12	12	8	10	8	129
by train accidents, ...	8	21	18	15	13	11	19	25	32	35	197
by falling from trains, . . .	24	47	46	43	55	35	42	55	74	82	503
by other causes, ...	19	34	48	62	97	56	70	78	119	112	695
Totals, ...	83	157	200	198	265	182	233	273	357	391	2,339

*Train Accidents in the United States in each Month during the Year ending Sept. 30, 1888.**

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
Collisions,	64	73	92	72	57	65	49	63	64	61	88	68	816
Derailments,	49	48	83	151	104	99	83	75	76	86	121	57	932
Other train accidents,	4	4	7	16	13	8	4	7	3	10	13	3	92
Total train accidents,	117	125	182	239	174	172	136	145	143	157	222	128	1,840
Derailment of passenger trains 1887–88,	14	10	29	66	35	28	29	26	23	29	37	15	341
Derailment of freight trains,	38	38	56	88	69	73	54	50	54	57	84	42	733
Number of persons killed,	9	11	17	39	14	66	28	15	21	34	33	24	311
Number of persons injured,	44	24	94	153	103	145	110	49	91	101	122	101	1,136
Collision between passenger trains and between passenger and freight trains,	21	25	46	40	26	43	16	28	27	28	31	25	356
Collision between freight trains,	98	108	132	100	80	83	78	93	90	87	127	99	1,175
Number of persons killed,	22	28	51	26	12	15	9	25	15	22	23	22	270
Number of persons injured,	65	77	112	69	54	66	75	102	34	65	77	121	917
Other train accidents,	4	4	7	16	2	5	4	7	3	10	13	3	78
Number of persons killed,	3	4	3	2	7	4	5	3	4	4	–	–	39
Number of persons injured,	–	4	5	1	–	–	6	7	–	3	3	1	30

Total number of persons killed,	620	Average collisions per month,	68.00
Total number of persons injured,	2,083	Average derailments per month,	77.66

* As reported in the Railroad Gazette.

Train Accidents in the United States during Ten Years.

	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
Total number of train accidents, . .	843	937	1,480	1,332	1,640	1,293	1,230	1,141	1,417	1,840
Total number of persons killed, . .	182	227	435	385	475	388	331	366	621	620
Total number of persons injured, . .	751	946	1,691	1,467	1,798	1,913	1,534	1,497	1,862	2,083

[L.]

CONSOLIDATED DRAFT OF STATUTES WHICH RELATE TO THE SEPARATION OF GRADES AT EXISTING GRADE CROSSINGS.

NOTE.—In some cases amendments are incorporated in the statutes which they amend, and in such case the portion of the statute thus amended is printed in italics.

P. S., c. 112, § 129. If a highway or a townway and a railroad cross each other, and the mayor and aldermen of the city or the selectmen of the town in which the crossing is, or the directors of a railroad corporation, are of the opinion that it is necessary for the security or convenience of the public that an alteration should be made in the crossing, the approaches thereto, the location of the railroad, highway or townway, or in a bridge at the crossing, the county commissioners, *or, in the city of Boston, the Board of Railroad Commissioners* (St. 1885, c. 194, § 2), shall, after due notice that such alteration is necessary, prescribe the manner and limits within which it shall be made, and shall forthwith certify their decision to the parties and also to the Board [and if the county commissioners decide that no alteration is necessary, the party making the application shall make the costs thereof*].

1885, c. 194, § 1. The jurisdiction given by section one hundred and twenty-nine of chapter one hundred and twelve of the Public Statutes to county commissioners upon petition, may also, for the separation of grades at any level crossing of a railroad with a highway or townway, be assumed and exercised by them on the petition in writing signed by not less than twenty legal voters of the county wherein such crossing is situated; provided, that before final action there shall be a hearing, of which thirty days' notice shall be given to each town, city and railroad company interested, and published not less than two weeks in some newspaper in the county; provided, that the power conferred upon the county commissioners by this section shall not be exercised unless they adjudge and certify that in their opinion the cost of the proposed change will not exceed three thousand dollars, and provided, that the order of the county commissioners, made under the additional power hereby conferred, shall not be carried into effect if it shall be made to appear, to the special commission provided for by section one hundred and thirty-two, that the cost of the change will

* Repealed 188., chap. 184, sect. 1.

CORRECTIONS.

Page 318, first paragraph, ninth line, after the words "after due notice" insert the words "hear all parties interested and if they decide".

Tenth line, insert the word "shall" before the word "prescribe."

Eleventh line, after the word "decision" insert the words "in the matter."

In the last line of the paragraph, strike out the word "make" and insert instead thereof the word "pay."

Page 320, after the words "orders of" in the third line, insert the words "the County Commissioners in such matters and proceedings shall apply to hearings and determinations by, and decisions and orders of".

On the same page, in the paragraph headed P. S. Chapter 112, Section 131, tenth line, strike out "1888" and insert "1887."

In the twelfth line, strike out "are" and insert "or." Strike out "many" and insert "any."

In the next paragraph headed P. S. Chapter 112, Section 132, strike out "Mayor or Aldermen" and insert "the Mayor and Aldermen."

Page 322, in the fourth line from the bottom, strike out "action" and insert "section."

exceed the sum of six thousand dollars. And if it be so made to appear, such special commission shall annul the order of the commissioners for said change. If said order is so annulled, the cost of the hearing by the special commissioners taxed by them and approved by the district attorney, shall be paid by the county.

St. 1885, c. 194, § 2. The Board of Railroad Commissioners shall have jurisdiction of cases arising in the city of Boston, under section one hundred and twenty-nine of chapter one hundred and twelve of the Public Statutes, either on petition by the mayor and aldermen of said city or the directors of the railroad company interested; and such directors are hereby authorized to petition in such cases.

St. 1882, c. 135, § 1. Any party aggrieved by the decision or order of the county commissioners in any matter or proceeding arising under section one hundred and twenty-nine and section one hundred and thirty-eight of chapter one hundred and twelve of the Public Statutes, may, *except when such decision or order directs a separation of grades* (St. 1885, c. 194, § 6), appeal therefrom to the Board of Railroad Commissioners.

St. 1882, c. 135, § 2. If the county commissioners unreasonably refuse or neglect, for sixty days after the first day fixed for hearing the parties in any such matter or proceeding, to announce a decision thereon, thereupon any party aggrieved by such refusal or neglect may appeal to the Board of Railroad Commissioners.

St. 1882, c. 135, § 3. An appeal shall be claimed by filing with the county commissioners, within ten days after making of the decision or order appealed from, or the expiration of sixty days from the first day fixed for hearing in cases of refusal or neglect, a notice of appeal, and thereupon all proceedings before the county commissioners in such matter or proceeding shall be stayed.

St. 1882, c. 135, § 4. The appellant, to perfect the appeal, shall, within twenty days after the filing of the notice of appeal, file with the clerk of the Board of Railroad Commissioners a petition setting forth the reasons of appeal, and within ten days after the filing of the petition cause a certified copy thereof to be served upon the county commissioners. If the appellant fails to perfect the appeal as herein required, thereupon proceedings may be had before the county commissioners as if no appeal had been taken.

St. 1882, c. 135, § 5. An appeal may be waived at any time before a hearing thereon, by agreement of the parties, in writing, filed with the county commissioners, and thereupon proceedings may then be had before the county commissioners as if no appeal had been taken.

St. 1882, c. 135, § 6. The Board of Railroad Commissioners shall, in matters and proceedings to which this act relates, have the same powers vested in, and perform the same duties required of, the county

commissioners in like matters and proceedings; and all provisions of law relating to hearings and determinations by, and decisions and orders of, the Board of Railroad Commissioners in such matters and proceedings under this act.

St. 1882, c. 135, § 7. The hearings before the Board of Railroad Commissioners in matters and proceedings to which this act relates shall be had in the county where the appeal is taken, unless the parties, in writing, otherwise agree.

P. S., c. 112, § 130. If the county commissioners decide that the location of the railroad or of the highway or townway shall be changed, land or other property may be taken therefor, according to the provisions of law authorizing the taking of land by railroad corporations or for highways or townways as the case may be, and all damages occasioned by such taking, *or otherwise* (St. 1885, c. 194, § 3), shall be assessed in the manner provided in the case of taking of land by railroad corporations or for highways or townways, respectively.

P. S., c. 112, § 131. A special commission of three discreet persons, to be appointed as provided in the following section, shall determine which party shall carry such decision into effect, and which party shall pay the charges and expenses of making such alterations and all future charges for keeping such crossing and the approaches thereto in repair, as well as the cost of the application to the county commissioners, and of the hearing before said special commission; and (St. 1885, c. 194, § 4) it may apportion all such charges, expenses and costs between the railroad corporation and the *towns, cities or counties* (St. 1888, c. 295) in which said crossing is situated *and other towns and cities specially benefited; provided that the counties are either, or many of them may be, omitted from such apportionment if such omission seems just, and any town or city, except that or those in which the crossing is situated, may also be omitted from the apportionment if it seems just so to do* (St. 1887, c. 295).

P. S., c. 112, § 132. The superior court, or a justice thereof, in term-time or vacation, upon the application of the county commissioners, mayor or aldermen, the selectmen, or directors of the railroad corporation for the appointment of such commission, shall cause notice thereof to be given to the other parties interested, fourteen days, at least, before the *time* (St. 1885, c. 194, § 5) fixed for the hearing, and thereupon [at the term of court held for civil business in the county in which such crossing is situated*], after a hearing, shall appoint such commission, one member of which shall be a member of and designated by the Board. The special commission shall meet as soon as may be after the members receive their

* Repealed by Stat. 1885, chap. 194, sect. 5.

appointments, and, after notice to and hearing of the parties, shall make its award in writing and return the same into the said court.

P. S., c. 112, § 133. A party aggrieved by said award may, within fourteen days after the same is so returned, apply to the court for a jury to revise and determine any matter of fact found therein: and thereupon the court shall order a trial by jury to be had at the bar of the court, after due notice to all parties interested in the matter of said award, in the same manner in which civil cases are tried by jury. The decree of the court upon said award, or upon the verdict of a jury, shall be final and binding; and said court shall have jurisdiction in equity to compel compliance therewith, and may also issue and enforce such interlocutory decrees and orders as justice may require.

P. S., c. 112, § 134. The party designated for that duty, having carried into effect the decision of the county commissioners, may recover of any other party in an action of contract the proportion awarded to be paid by such other party, with interest; and if the party so designated unreasonably neglects or refuses to carry the decision into effect, any other party affected by such neglect or refusal may proceed to do it, and may recover from each or all of the others in an action of tort the proportion awarded to be paid by them respectively, and from the party so neglecting or refusing, all charges, expenses and costs occasioned thereby.

St. 1884, c. 280. The provisions of chapter fifty-one of the Public Statutes (being the chapter relating to betterments and other assessments on account of the cost of public improvements) shall apply to any alteration of a highway, townway, bridge or its approaches, made in pursuance of Public Statutes, chapter one hundred and twelve, sections one hundred and twenty-nine to one hundred and thirty-four, inclusive, and any acts in addition thereto.

P. S., c. 112, § 135. Original jurisdiction of all questions touching obstructions to highways or townways, caused by the construction or operation of railroads, shall be vested in the county commissioners within their respective jurisdictions.

P. S., c. 112, § 136. The supreme judicial court may, by proceedings in equity, compel railroad corporations to raise or lower a highway or townway when the county commissioners have decided that such raising or lowering is necessary for the security of the public, and to comply with the orders and decrees of county commissioners in all cases touching obstructions to such ways by railroads; and said court or a justice thereof, if it is made to appear in term-time or vacation, upon the petition of the mayor and aldermen or selectmen of a place, that a corporation has excavated or altered a highway or townway without obtaining the decree and giving the

security required by section one hundred and twenty-one, or has neglected for fifteen days to give security as required by section one hundred and twenty-seven, may, by injunction or other suitable process in equity, restrain it from entering upon, altering, excavating or crossing the way until such decree is obtained or such security is given. Said court shall have full equity jurisdiction in case of any violation of the provisions of section ninety-four, and also in case the Board certifies a location before ascertaining that the authority and consent required by said action have been obtained, and also in case any corporation enters upon or uses any land or other property, except for making surveys, before it has duly filled its location in the county in which such land or other property is situated.

[M.]

EXPENSES OF OFFICE.

Rent of office,	$2,500 00
Care of office and messenger,	500 00
Salary of bridge engineer,	3,000 00
Compensation of experts and other agents,	1,418 09
Stenographer and typewriter,	509 05
Printing and binding,	769 60
Stationery,	153 65
Telephone and telegrams,	123 50
Postage,	139 00
Newspapers and railroad publications,	79 55
Furniture, repairs and cleaning office,	109 67
Advertising,	42 46
Watering street, and ice,	30 00
Gas,	20 15
Witness fees,	6 40
Express, firewood and other incidentals,	16 79
	$9,417 91

BOARD OF RAILROAD COMMISSIONERS.

George G. Crocker, Boston, *Chairman*,	Term expires July, 1891
Edward W. Kinsley, Boston,	" " July, 1890
Everett A. Stevens, Boston,	" " July, 1889

Clerk — William A. Crafts, Boston.
Accountant — Fred E. Jones, Boston.

TABULATED STATEMENT

OF

RAILWAY AND RAILROAD RETURNS.

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ABSTRACT OF STREET RAILWAY RETURNS.

	STREET RAILWAYS.	Capital Stock, Debt, etc.						
		1.—Capital Stock paid in.	2.—Number of Stockholders.	3.—Funded Debt.	4.—Unfunded Debt.	5.—Gross Debt.	6.—Cash and Cash Assets.	7.—Net Debt.
1	Albany Street Freight,	$50,000 00	8	–	–	–	$961 32	–
2	Arlington,[1]	25,000 00	10	–	–	–	–	–
3	Brockton,	150,000 00	73	$100,000 00	$11,124 68	$111,124 68	7,553 23	$153,571 45
4	Black Rocks & Salisbury B'h,	45,000 00	7	–	5,002 20	5,002 20	5,542 35	–
5	Boston & Chelsea,	121,000 00	95	–	–	–	–	–
6	Boston Consolidated,[2]	1,700,000 00	–	1,300,000 00	479,667 76	1,779,667 76	610,971 39	1,168,696 37
7	Cambridge,[3]	1,975,000 00	–	750,000 00	16,738 80	766,738 80	15,940 74	750,798 06
8	East Middlesex,	200,000 00	58	125,000 00	37,833 99	162,833 99	12,277 46	150,556 53
9	East Side,	33,590 00	200	–	–	–	1,246 57	–
10	East Wareham, Onset Bay & Point Independence,	8,000 00	46	–	4,050 16	4,050 16	920 06	3,130 10
11	Fitchburg,	60,000 00	22	–	14,857 11	14,857 11	4,096 53	10,760 58
12	Framingham Union,	–[4]	–	–	–	–	–	–
13	Globe,	300,000 00	112	–	25,368 80	25,368 80	13,397 92	11,970 88
14	Gloucester,	60,000 00	11	34,000 00	–	34,000 00	2,463 34	31,536 66
15	Haverhill & Groveland,	144,000 00	68	–	8,000 00	8,000 00	9,464 94	–
16	Holyoke,	50,000 00	14	–	16,600 00	16,600 00	222 30	16,377 70
17	Hoosac Valley,	50,000 00	7	50,000 00	21,725 24	71,725 24	4,267 51	67,457 73
18	Lowell,	100,000 00	78	50,000 00	56,403 00	106,403 00	14,151 91	92,251 09
19	Lowell & Dracut,	60,000 00	60	–	87,250 00	87,250 00	92 53	87,157 47
20	Lynn & Boston,	400,000 00	130	425,000 00	57,972 44	482,972 44	41,168 48	441,803 96
21	Marlborough,	13,000 00	6	–	–	–	10,379 68	–
22	Malden & Melrose,	165,500 00	51	–	–	–	–	–
23	Merrimack Valley,	50,000 00	31	–	2,833 63	2,833 63	500 00	2,333 63
24	Metropolitan,[2]	2,000,000 00	12	1,457,442 12	148,212 39	1,605,654 51	172,133 71	1,433,520 80

25	Naumkeag,	250,000 00	59	300,600 00	267,674 79	568,274 79	127,233 76	441,041 03
26	Natick & Cochituate,	25,000 00	54	–	410 10	410 10	1,424 33	–
27	Newton,*	–	–	–	–	–	–	–
28	Newburyport & Amesbury,	120,000 00	27	50,000 00	56,939 13	106,939 13	16,050 59	90,888 54
29	Northampton,	50,000 00	11	–	5,000 00	5,000 00	77 16	4,922 84
30	North Woburn,	100,000 00	64	–	18,683 39	18,683 39	5,297 42	13,385 97
31	Onset,	13,520 00	21	–	–	–	575 83	–
32	Pittsfield,	43,110 00†	46	–	13,000 00	13,000 00	328 97	12,671 03
33	Plum Island,	40,000 00	20	9,000 00	42,146 52	51,146 52	4,503 36	46,643 16
34	Quincy,	34,450 00	95	–	2,418 32	2,418 32	3,837 93	–
35	Quincy & Boston,‡	29,580 00	56	–	–	–	29,580 00	–
36	Revere,	15,000 00	11	–	–	–	2,271 43	–
37	Somerville,	153,000 00	121	–	–	–	–	–
38	South Boston,[2]	750,000 00	9	200,000 00	178,334 46	378,334 46	13,672 49	364,661 97
39	Springfield,	350,000 00	96	–	4,610 01	4,610 01	28,671 95	–
40	Suburban,[5]	150,000 00	14	–	–	–	100,174 58	–
41	Taunton,	100,000 00	182	–	30,000 00	30,000 00	1,818 43	28,181 57
42	Union,	260,000 00	162	93,000 00	1,942 50	94,942 50	14,127 84	80,814 66
43	Waltham & Newton,	30,000 00	90	–	15,400 00	15,400 00	2,988 68	12,411 32
44	West End,	6,821,100 00§	2,101‖	3,747,442 12	1,564,178 22	5,311,620 34	842,120 52	4,469,499 82
45	Winnisimmet,	50,000 00	40	–	40 50	40 50	163 85	–
46	Worcester Consolidated,	350,000 00	41	150,000 00	63,743 91	213,743 91	17,241 91	196,502 00
	Totals,[6]	$10,894,850 00	4,374	$5,134,042 12	$2,435,208 64	$7,569,250 76	$1,227,020 09	$6,342,230 67

[1] Consolidated with the Cambridge, November 9, under the authority of chapter 134 of the Acts of 1864.

[2] Consolidated with the West End November 12. [3] Consolidated with the West End November 19. [4] Report defective and not accepted.

[5] Consolidated with the West End January 28. [6] Arlington, Boston Consolidated, Cambridge, Metropolitan, South Boston and Suburban not included.

* Capital stock of $50,000 subscribed in full, but none as yet paid in. Location granted by city of Newton, but no construction commenced.

† There is a certificate issued for 64 shares of stock, but the company claim that it was issued without consideration, and that it was signed without authority, and a suit has been commenced to test the validity of the certificate.

‡ Received a certificate of incorporation, but has not yet commenced the construction of its road.

§ Preferred, $6,400,000; common, $421,100. ‖ Preferred, 2,085; common, 16.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	Cost of Road, Equipment, etc.					
		8. — Road.	9. — Equipment.	10. — Land and Buildings.	11. — Other Property.	12. — Total Permanent Investments.	13. — Total Property and Assets.
1	Albany Street Freight,	$49,066 29	–	–	–	$49,066 29	$50,027 61
2	Arlington,	25,000 00	–	–	–	25,000 00	25,000 00
3	Brockton,	170,570 58	$51,452 33	$36,809 71	–	258,832 62	266,385 85
4	Black Rocks & Salisbury Beach,	30,975 75	6,915 49	12,110 96	–	50,002 20	55,544 55
5	Boston & Chelsea,	121.000 00	–	–	–	121,000 00	121,000 00
6	Boston Consolidated,	1,206,701 66	764,475 48	883,255 73	$111,963 90	2,966,396 77	3,577,368 16
7	Cambridge,	1,399,387 31	631,022 57	726,688 21	25,000 00	2,782,098 09	2,798,038 83
8	East Middlesex,	215,362 11	88,397 89	58,084 81	–	361,844 81	374,122 27
9	East Side,	26,952 90	3,383 31	2,007 22	–	32,343 43	33,590 00
10	East Wareham, Onset Bay & Point Independence,	8,447 88	2,677 28	925 00	–	12,050 16	12,970 22
11	Fitchburg,	55,956 07	14,135 00	5,649 30	500 00	76,240 37	80,336 90
12	Framingham Union,	–	–	–	–	–	–
13	Globe,	206,871 51	66,847 41	58,324 41	–	332,043 33	345,441 25
14	Gloucester,	44,191 81	27,214 51	17,300 09	–	88,706 41	91,169 75
15	Haverhill & Groveland,	72,609 03	38,761 01	25,104 74	–	136,474 78	145,939 72
16	Holyoke,	41,707 32	21,803 14	820 46	–	64,330 92	64,553 22
17	Hoosac Valley,	94,217 15	15,939 83	7,100 00	–	117,256 98	121,524 49
18	Lowell,	142,934 05	68,379 67	40,235 57	–	251,549 29	265,701 20
19	Lowell & Dracut,	91,855 09	39,905 21	18,355 09	1,000 00	151,115 39	151,207 92
20	Lynn & Boston,	510,491 49	218,157 10	172,875 99	–	901,524 58	942,693 06
21	Marlborough,	2,620 32	–	–	–	2,620 32	13,000 00
22	Malden & Melrose,	165,500 00	–	–	–	165,500 00	165,500 00
23	Merrimack Valley,	30,000 00	18,500 00	35,600 00	–	84,100 00	84,600 00

24	Metropolitan,	1,748,685 11	1,035,061 75	1,220,586 88	350,000 00	4,354,333 74	4,526,467 45
25	Naumkeag,	500,905 41	131,515 92	93,454 86	–	725,876 19	853,109 95
26	Natick & Cochituate,	21,550 00	7,142 50	4,000 00	–	32,692 50	34,116 83
27	Newton,	–	–	–	–	–	–
28	Newburyport & Amesbury,	135,575 14	52,789 73	32,359 28	–	220,724 15	236,774 74
29	Northampton,	36,000 00	8,700 00	5,125 50	–	49,825 50	49,902 66
30	North Woburn,	86,503 47	19,587 09	9,637 74	–	115,728 30	121,025 72
31	Onset,	6,368 13	7,091 15	381 87	–	13,841 15	14,416 98
32	Pittsfield,	28,239 28	15,449 41	5,771 34	1,325 11	50,785 14	51,114 11
33	Plum Island,	54,239 85	11,388 60	21,300 73	1,277 13	88,206 31	92,709 67
34	Quincy,	27,984 57	5,442 16	–	–	33,426 73	37,264 66
35	Quincy & Boston,	–	–	–	–	–	29,580 00
36	Revere,	9,199 48	650 00	234 00	–	10,083 48	12,354 91
37	Somerville,	153,000 00	–	–	–	153,000 00	153,000 00
38	South Boston,	326,857 99	352,250 34	363,493 61	10,000 00	1,052,601 94	1,066,274 43
39	Springfield,	202,491 34	84,168 75	112,898 04	–	399,558 13	428,230 08
40	Suburban,	49,825 42	–	–	–	49,825 42	150,000 00
41	Taunton,	72,600 18	34,749 45	25,588 92	–	132,938 55	134,756 98
42	Union,	205,661 22	93,818 35	68,943 62	–	368,423 19	382,551 03
43	Waltham & Newton,	37,493 41	10,024 37	3,767 57	–	51,285 35	54,274 03
44	West End,	5,019,866 60	2,617,113 62	4,032,731 75	–	11,669,711 97	12,511,832 49
45	Winnisimmet,	50,000 00	–	–	–	50,000 00	50,163 85
46	Worcester Consolidated,	299,809 42	122,337 95	134,779 60	–	556,926 97	574,168 88
	Totals,[1]	$9,028,816 85	$3,904,438 23	$5,042,278 17	$4,102 24	$17,979,635 49	$19,206,655 58

[1] Arlington, Boston Consolidated, Cambridge, Metropolitan, South Boston and Suburban not included.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	PROPERTY ACCOUNTS: ADDITIONS AND REDUCTIONS DURING THE YEAR.					
		14. — Construction.	**15.** — Equipment.	**16.** — Other Property.	**17.** — Total Additions.	**18.** — Reductions.	**19.** — Net Additions.
1	Albany Street Freight,	–	–	–	–	–	–
2	Arlington,	–	–	–	–	–	–
3	Brockton,	$1,328 28	$3,650 44	$505 03	$5,483 75	$892 55	$4,591 20
4	Black Rocks & Salisbury Beach,	25,109 42	6,403 49	11,730 96	43,243 87	1,888 00	41,355 87
5	Boston & Chelsea,	–	–	–	–	–	–
6	Boston Consolidated,[1]	49,568 89	1,703 33	431 70	51,703 92	23,146 48	28,557 44
7	Cambridge,[2]	25,000 00	–	–	25,000 00	101,476 98	76,476 98*d*
8	East Middlesex,	2,939 17	20,186 01	1,018 04	24,143 22	5,545 89	18,597 33
9	East Side,	26,952 90	3,383 31	2,007 22	32,343 43	–	32,343 43*
10	East Wareham, Onset Bay & Point Independence,	8,447 88	2,677 28	925 00	12,050 16	–	12,050 16*
11	Fitchburg,	2,223 41	2,584 47	591 52	5,399 40	2,891 89	2,507 51
12	Framingham Union,	–	–	–	–	–	–
13	Globe,	1,753 03	2,090 41	786 28	4,629 72	–	4,629 72
14	Gloucester,	–	64 56	–	64 56	837 95	773 39*d*
15	Haverhill & Groveland,	1,825 13	1,141 00	804 05	3,770 18	11,320 18	7,550 00*d*
16	Holyoke,	13,680 88	385 00	–	14,065 88	–	14,065 88
17	Hoosac Valley,	–	1,837 12	–	1,837 12	3,270 00	1,432 88*d*
18	Lowell,	27,022 62	21,303 46	8,215 31	56,541 39	1,034 70	55,506 69
19	Lowell & Dracut,	29,266 53	14,732 76	11,118 77	55,118 06	–	55,118 06
20	Lynn & Boston,	29,820 68	15,563 98	21,220 32	66,604 98	125 00	66,479 98
21	Marlborough,	2,620 32	–	–	2,620 32	–	2,620 32†
22	Malden & Melrose,	–	–	–	–	–	–
23	Merrimack Valley,	–	–	–	–	–	–
24	Metropolitan,[1]	6,263 88	–	2,588 36	8,852 24	148,447 40	139,595 16*d*

25	Naumkeag,	27,102 93	9,715 01	2,634 73	39,452 67	625 00	38,827 67
26	Natick & Cochituate,	–	242 50	–	242 50	–	242 50
27	Newton,	–	–	–	–	–	–
28	Newburyport & Amesbury,	54,813 71	23,463 88	12,577 59	90,855 18	–	90,855 18
29	Northampton,	–	–	425 50	425 50	417 50	8 00
30	North Woburn,	35,075 77	5,720 64	–	40,796 41	585 50	40,210 91
31	Onset,	178 79	194 85	25 05	398 69	–	398 69
32	Pittsfield,	11 26	2,120 06	1,599 00	3,730 32	–	3,730 32
33	Plum Island,	586 27	4,778 55	2,340 98	7,702 80	400 00	7,302 80
34	Quincy,	27,984 57	5,442 16	–	33,426 73	–	33,426 73*
35	Quincy & Boston,§	–	–	–	–	–	–
36	Revere,	9,199 48	650 00	234 00	10,083 48	–	10,083 48*
37	Somerville,	–	–	–	–	–	–
38	South Boston,[1]	24,119 85	5,255 00	–	29,374 85	14,244 50	15,130 35
39	Springfield,	49,755 80	16,248 88	15,045 94	81,050 62	–	81,050 62
40	Suburban,[3]	35,825 42	–	–	35,825 42	–	35,825 42
41	Taunton,	21,867 75	5,062 83	17,148 99	44,079 57	–	44,079 57
42	Union,	605 11	338 00	–	943 11	1,612 41	669 30*d*
43	Waltham & Newton,	–	662 50	318 69	981 19	–	981 19
44	West End,	309,244 11	108,329 61	11,266,231 52‡	11,683,805 24	81,635 61	11,602,169 63
45	Winnisimmet,	–	–	–	–	–	–
46	Worcester Consolidated,	5,545 50	12,923 67	11,045 48	29,514 65	–	29,514 65

[1] From Oct. 1, 1887, to Nov. 12, 1887. [2] From Oct. 1, 1887, to Nov. 19, 1887. [3] From Oct. 1, 1887, to Jan. 28, 1888.

* Built during the year. † Roads in process of construction. ‡ Property derived through consolidation, $10,899,488.10. *d* Reduction.

§ On December 8, the company filed an additional statement, viz.: *Railway*, — Commissions for procuring subscriptions, $5,000; for treasurer's bond and Commonwealth of Massachusetts [half cost of treasurer's bond paid by him on Oct. 12, 1888, $37.50], $125; total cost of construction, $5,125; total amount of permanent investments, $5,125; cash assets, $24,455; total property and assets of company, $29,580.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	REVENUE FOR THE YEAR.					
		20.—Passengers.	21.—Rents.	22.—Mail and Express.	23.—Sales of Manure.	24.—Other Sources.	25.—Total Income.
1	Albany Street Freight,	–[1]	–	–	–	$2,252 00	$2,252 00
2	Arlington,[2]	–	–	–	–	–	–
3	Brockton,	74,100 05	–	–	$700 42	594 86	75,395 33
4	Black Rocks & Salisbury Beach,	9,110 31	–	–	–	875 00	9,985 31
5	Boston & Chelsea,	–[3]	$7,260 00	–	–	–	7,260 00
6	Boston Consolidated,[4]	134,320 42	453 70	–	–	380 77	135,154 89
7	Cambridge,[5]	119,245 28	–	–	668 82	683 65	120,597 75
8	East Middlesex,	58,566 95	73 30	$240 00	928 42	538 25	60,346 92
9	East Side,	–[6]	–	–	–	–	–
10	East Wareham, Onset Bay & Point Independence,	1,972 80	–	176 02	–	667 03	2,815 85
11	Fitchburg,	24,556 74	–	–	190 76	184 70	24,932 20
12	Framingham Union,	–	–	–	–	–	–
13	Globe,	127,634 77	–	–	1,399 94	574 00	129,608 71
14	Gloucester,	30,521 51	–	–	37 75	392 54	30,951 80
15	Haverhill & Groveland,	47,115 89	–	–	358 24	566 25	48,040 38
16	Holyoke,	25,055 46	–	–	276 55	28 00	25,360 01
17	Hoosac Valley,	18,771 62	–	–	–	–	18,771 62
18	Lowell,	107,742 47	158 42	–	631 66	18 88	108,551 43
19	Lowell & Dracut,	34,373 24	256 68		241 67	685 36	35,556 95
20	Lynn & Boston,	484,293 67	1,039 74	–	3,193 31	1,555 00	490,081 72
21	Marlborough,	–	–	–	–	–	–
22	Malden & Melrose,	–[7]	–	–	–	–	–
23	Merrimack Valley,	61,403 01	–	–	640 64	200 04	62,243 69

24	Metropolitan,[4]	280,416 74	3,401 58	–	593 60	1,152 30	285,564 22
25	Naumkeag,	201,194 45	–	–	2,012 65	849 74	204,056 84
26	Natick & Cochituate,	14,946 75	–	423 13	–	244 08	15,613 96
27	Newton,	–	–	–	–	–	–
28	Newburyport & Amesbury,	43,452 70	–	–	358 38	367 45	44,178 53
29	Northampton,	16,538 21	–	232 50	113 00	–	16,883 71
30	North Woburn,	15,272 98	64 21	–	208 17	150 00	15,695 36
31	Onset,	1,999 15	–	–	5 00	320 26	2,324 41
32	Pittsfield,	15,782 28	–	–	260 00	132 60	16,174 88
33	Plum Island,	8,019 65	–	–	11 00	1,170 00	9,200 65
34	Quincy,	5,177 75	–	–	–	6 25	5,184 00[8]
35	Quincy & Boston,	–	–	–	–	–	–
36	Revere,	635 45	–	–	–	–	635 45[9]
37	Somerville,	–[10]	9,180 00	–	–	–	9,180 00
38	South Boston,[4]	68,405 72	1,256 71	–	130 00	297 15	70,089 58
39	Springfield,	138,984 87	–	–	734 99	6,060 66	145,780 52
40	Suburban,[11]	–[6]	–	–	–	–	–
41	Taunton,	38,358 64	–	–	–	–	38,358 64
42	Union,	114,621 38	–	59 51	2,379 55	527 16	117,587 60
43	Waltham & Newton,	14,513 35	–	50 00	100 00	–	14,663 35
44	West End,[12]	4,213,953 61	10,042 64	–	21,138 04	31,196 89	4,276,331 18
45	Winnisimmet,	–[3]	3,000 00	–	–	–	3,000 00
46	Worcester Consolidated,	180,292 39	–	–	1,181 09	621 40	182,094 88
	Totals,	6,731,350 26	$36,186 98	$1,181 16	$38,493 65	$53,292 27	$6,860,504 32

[1] Used only for the transportation of freight.
[2] From October 1 to November 9 no income received from lessee. Operated by West End.
[3] Operated by the Lynn & Boston.
[4] From Oct. 1, 1887, to Nov. 12, 1887.
[5] From Oct. 1, 1887, to Nov. 19, 1887.
[6] Road not completed and not in operation.
[7] Operated by the West End.
[8] Commenced operating 2 miles July 4, and balance of road opened July 29.
[9] Operated but 24 days during the year, and operated by electricity.
[10] Leased to and operated by the West End.
[11] From Oct. 1, 1887, to Jan. 28, 1888.
[12] From Nov. 12, 1887, to Sept. 30, 1888.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	EXPENSES FOR THE YEAR.						
		26.—Repairs of Road-bed and Track.	**27.**—Repairs of Equipment.	**28.**—Repairs of Buildings.	**29.**—Renewal of Horses.	**30.**—Salaries, etc., General Office.	**31.**—Wages, etc., Employés.	**32.**—Provender.
1	Albany Street Freight,	$388 61	–	–	–	$150 00	–	–
2	Arlington,	–	–	–	–	–	–	–
3	Brockton,	296 63	$2,839 25	$128 48	$1,347 50	2,765 83	$28,303 70	$14,246 43
4	Black Rocks & Salisbury Beach,	–	1,014 76	–	–	880 40	1,946 76	579 70
5	Boston & Chelsea,	–	–	–	–	–	–	–
6	Boston Consolidated,[1]	34,745 23	39,136 29	245 22	–	–	69,333 31	56,968 98
7	Cambridge,[2]	9,090 57	15,521 79	4,647 04	2,338 00	2,627 72	33,283 54	24,891 85
8	East Middlesex,	2,591 90	3,598 89	458 02	3,334 71	3,549 93	25,397 80	13,414 12
9	East Side,	–	–	–	–	–	–	–
10	East Wareham, Onset Bay & Point Independence,	–	40 12	–	–	–	954 78	582 14
11	Fitchburg,	381 65	1,144 56	187 07	–	2,258 30	7,919 29	3,754 30
12	Framingham Union,	–	–	–	–	–	–	–
13	Globe,	9,263 77	8,584 06	993 94	4,933 34	5,500 00	44,717 56	21,274 41
14	Gloucester,	1,834 86	2,213 00	138 79	638 15	1,670 34	13,798 48	7,543 06
15	Haverhill & Groveland,	3,974 42	3,642 28	102 14	762 25	2,600 00	17,196 74	9,426 53
16	Holyoke,	584 47	1,622 91	75 69	1,190 00	1,516 64	12,176 41	7,395 80
17	Hoosac Valley,	167 86	292 46	54 87	475 00	913 64	6,537 49	3,683 13
18	Lowell,	788 81	6,615 12	–	–	3,475 67	52,642 26	17,404 18
19	Lowell & Dracut,	–	1,846 51	–	–	406 59	19,891 35	7,761 22
20	Lynn & Boston,	26,370 95	39,974 57	1,732 36	19,187 52	13,399 54	199,423 72	72,887 37
21	Marlborough,	–	–	–	–	–	–	–
22	Malden & Melrose,	–	–	–	–	–	–	–
23	Merrimack Valley,	3,253 84	4,308 63	401 46	1,190 00	2,000 00	25,099 71	11,691 11
24	Metropolitan,[1]	12,051 58	20,022 58	4,214 99	11,201 00	100,315 33	2,966 65	32,716 38

25	Naumkeag,	3,845 81	10,171 91	765 17	8,037 00	6,892 13	73,618 90	32,059 32
26	Natick & Cochituate,	2,580 62	–	–	340 50	1,100 00	3,699 37	2,579 81
27	Newton,	–	–	–	–	–	–	–
28	Newburyport & Amesbury,	1,109 10	1,780 05	209 02	2,168 00	–	16,937 63	7,652 53
29	Northampton,	1,187 71	2,336 54	613 34	1,685 25	1,000 00	4,283 75	3,858 58
30	North Woburn,	302 45	799 75	78 99	324 00	1,429 84	5,017 94	2,927 87
31	Onset,	186 72	136 94	–	–	150 00	1,126 92	205 06*
32	Pittsfield,	720 93	1,073 86	171 16	–	1,750 00	8,272 77	5,534 95
33	Plum Island,	676 27	532 94	1,569 18	–	–	2,184 79	685 96
34	Quincy,	–	158 96	–	–	250 00	230 67	–
35	Quincy & Boston,	–	–	–	–	–	–	–
36	Revere,	–	–	–	–	2,500 00	90 00	–
37	Somerville,	–	–	–	–	–	–	–
38	South Boston,[1]	7,793 36	8,083 17	369 96	3,207 50	1,389 98	27,239 76	3,921 04
39	Springfield,	8,297 14	9,781 81	498 25	3,182 50	5,820 00	49,841 82	26,055 95
40	Suburban,	–	–	–	–	–	–	–
41	Taunton,	1,863 66	4,934 39	29 12	–	1,700 00	12,702 76	11,098 87
42	Union,	3,514 10	6,598 41	280 48	–	3,405 00	47,855 90	26,459 22
43	Waltham & Newton,	1,571 55	309 85	–	–	945 00	4,667 54	2,657 53
44	West End,[3]	175,228 06	267,010 20	72,055 51	78,470 27	66,085 15	1,807,156 45	615,719 51
45	Winnisimmet,	–	–	–	–	–	–	–
46	Worcester Consolidated,	4,280 92	15,453 10	3,536 37	3,408 83	7,664 01	62,214 33	32,236 51
	Totals,	$318,943 55	$481,579 66	$93,556 62	$147,421 32	$246,111 04	$2,688,730 85	$1,079,873 42

[1] From Oct. 1, 1887, to Nov. 12, 1887.

[2] From Oct. 1, 1887, to Nov. 19, 1887.

[3] From Nov. 12, 1887, to Sept. 30, 1888.

* Coal, wood and water for motors.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	EXPENSES FOR THE YEAR — Concluded.						
		33.—Taxes.	34.—Rents.	35.—Insurance.	36.—Injuries to Persons and Property.	37.—Other Expenses.	38.—Total Expenses.	39.—Percentage Expenses to Earnings.
1	Albany Street Freight,	$171 78	–	–	–	$1,469 50	$2,179 89	–
2	Arlington,	–	–	–	–	–	–	–
3	Brockton,	2,400 86	–	$1,193 22	$178 00	1,615 07	55,314 97	73
4	Black Rocks & Salisbury Beach,	4 31	–	–	–	897 43	5,323 36	53
5	Boston & Chelsea,	–	–	–	–	–	–	–
6	Boston Consolidated,[1]	1,063 09	–	1,937 54	–	10,770 83	214,200 49	–
7	Cambridge,[2]	122 89	$578 56	11,402 27	4,818 65	2,307 72	111,630 60	–
8	East Middlesex,	1,886 63	656 44	1,778 40	163 00	5,796 25	62,626 09	104
9	East Side,	–	–	–	–	–	–	–
10	East Wareham, Onset Bay & Point Independence,	56 49	–	37 50	–	224 76	1,895 79	–
11	Fitchburg,	1,028 35	–	150 19	2,038 75	2,775 92	21,638 38	87
12	Framingham Union,	–	–	–	–	–	–	–
13	Globe,	5,409 66	–	1,369 00	1,406 82	6,860 31	110,312 87	85
14	Gloucester,	595 47	–	278 13	178 60	1,123 59	30,012 47	97
15	Haverhill & Groveland,	1,892 41	–	621 60	10 00	2,390 36	42,618 73	89
16	Holyoke,	395 97	–	305 98	–	3,644 97	28,908 84	114
17	Hoosac Valley,	54 93	–	141 54	482 56	1,276 14	14,079 62	75
18	Lowell,	1,876 91	256 68	555 84	147 26	13,539 97	97,302 70	90
19	Lowell & Dracut,	240 29	158 42	334 08	673 05	3,109 78	34,421 29	97
20	Lynn & Boston,	7,319 07	24,066 14	3,652 06	5,178 44	21,569 01	434,760 75	89
21	Marlborough,	–	–	–	–	–	–	–
22	Malden & Melrose,	–	–	–	–	–	–	–
23	Merrimack Valley,	1,522 54	–	–	–	1,383 67	50,850 96	81
24	Metropolitan,[1]	5,400 00	704 22	1,000 00	5,358 36	6,590 29	202,541 38	–

25	Naumkeag,	7,503 83	376 40	2,390 88	6,172 00	8,750 22	160,583 57	79
26	Natick & Cochituate,	461 56	–	138 00	–	352 29	11,252 15	72
27	Newton,	–	–	–	–	–	–	–
28	Newburyport & Amesbury,	465 66	–	653 50	–	3,870 00	34,845 49	79
29	Northampton,	89 03	–	186 00	–	1,564 54	16,804 74	99
30	North Woburn,	1,162 03	33 19	334 49	11 00	1,185 96	13,607 51	87
31	Onset,	187 43	–	67 50	–	236 99	2,297 56	–
32	Pittsfield,	512 42	–	191 35	10 00	1,717 10	19,954 54	123
33	Plum Island,	703 50	–	390 00	–	1,746 88	8,489 52	92
34	Quincy,	–	3,614 97*	89 00	–	444 06	4,787 66	–
35	Quincy & Boston,	–	–	–	–	–	–	–
36	Revere,	–	–	–	–	690 54	3,280 54	–
37	Somerville,	–	–	–	–	–	–	–
38	South Boston,[1]	–	1,075 00	3,330 32	1,521 02	5,872 60	63,803 71	–
39	Springfield,	6,087 65	–	930 54	5,223 45	3,015 95	118,735 06	82
40	Suburban,	–	–	–	–	–	–	–
41	Taunton,	1,046 08	–	550 70	–	2,440 81	36,366 39	95
42	Union,	2,764 15	–	1,302 86	201 38	3,591 31	95,972 81	82
43	Waltham & Newton,	37 26	–	101 00	–	1,742 01	12,031 74	82
44	West End,[3]	133,269 22	8,859 54	11,933 68	38,658 11	215,294 34	3,489,740 04	82
45	Winnisimmet,	–	–	–	–	–	–	–
46	Worcester Consolidated,	4,743 27	–	1,414 24	214 15	15,283 59	150,479 32	83
	Totals,	$190,474 74	$40,379 56	$48,761 41	$72,674 60	$355,144 76	$5,763,651 53	–

[1] From Oct. 1, 1887, to Nov. 12, 1887. [2] From Oct. 1, 1887, to Nov. 19, 1887. [3] From Nov. 12, 1887, to Sept. 30, 1888.

* Amount paid contractor for operating the road, for conductors, drivers and horses.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	NET INCOME, INTEREST, DIVIDENDS, ETC.						
		40. — Net Income.	**41.** — Interest Accrued.	**42.** — Dividends Declared.	**43.** — Per Cent.	**44.** — Balance for the Year.	**45.** — Surplus last Year	**46.** — Surplus Sept. 30, 1888.
1	Albany Street Freight,	$72 11	–	–	–	$72 11	$44 50*d*	$27 61
2	Arlington,	–	–	–	–	–	–	–
3	Brockton,	20,080 36	$4,808 77	$4,500 00	3	10,771 59	5,510 42*d*	5,261 17
4	Black Rocks & Salisbury Beach,	4,661 95	–	900 00	10	3,761 95	1,780 40	5,542 35
5	Boston & Chelsea,	7,260 00	–	7,260 00	6	–	–	–
6	Boston Consolidated,	79,045 60*d*	10,692 17	–	–	[1]89,737 77*d*	[2]80,365 84*d*	[1]170,103 61*d*
7	Cambridge,	8,967 15	–	–	–	8,967 15[3]	[4]77,905 59*d*	[3]68,938 44*d*
8	East Middlesex,	2,279 17*d*	6,284 95	–	–	8,564 12*d*	19,852 40	11,288 28
9	East Side,	–	–	–	–	–	–	–
10	East Wareham, Onset Bay & Point Independence,	920 06	–	–	–	920 06	–	920 06
11	Fitchburg,	3,293 82	123 89	1,800 00	3	1,369 93	4,109 86*	5,479 79
12	Framingham Union,	–	–	–	–	–	–	–
13	Globe,	19,295 84	1,017 25	18,000 00	6	278 59	19,793 86	20,072 45
14	Gloucester,	939 33	1,700 00	–	–	760 67*d*	2,069 58*d*	2,830 25*d*
15	Haverhill & Groveland,	5,421 65	585 77	–	–	4,835 88	†10,896 16*d*	6,060 28*d*
16	Holyoke,	3,548 83*d*	–	1,250 00	5‡	4,798 83*d*	2,752 05	2,046 78*d*
17	Hoosac Valley,	4,692 00	3,858 87	–	–	833 13	1,033 88*d*	200 75*d*
18	Lowell,	11,248 73	2,790 00	6,000 00	6	2,458 73	56,839 47	59,298 20
19	Lowell & Dracut,	1,135 66	–	450 00	3§	685 66	3,272 26	3,957 92
20	Lynn & Boston,	55,320 97	25,253 26	24,000 00	8‖	6,067 71	53,652 91	59,720 62
21	Marlborough,	–	–	–	–	–	–	–
22	Malden & Melrose,	–	–	–	–	–	–	–
23	Merrimack Valley,	11,392 73	664 36	4,000 00	8	6,728 37	25,038 00	31,766 37
24	Metropolitan,	83,022 84	7,900 00	–	–	75,122 84[1]	657,821 62[5]	732,944 46[1]
25	Naumkeag,	43,473 27	23,223 09	20,000 00	8	250 18	34,584 98	34,835 16

ERRATUM.

On pages 345 and 347, the figures of the returns from the South Boston and the Springfield Companies have been transposed.

26	Natick & Cochituate,	4,361 81	56 35	1,500 00	6	2,805 46	5,901 27	8,706 73
27	Newton,	–	–	–	–	–	–	–
28	Newburyport & Amesbury,	9,333 04	6,156 92	–	–	3,176 12	6,659 49	9,835 61
29	Northampton,	78 97	–	–	–	78 97	5,176 31*d*	5,097 34*d*
30	North Woburn,	2,087 85	182 32	2,250 00	3¶	344 47*d*	2,686 80	2,342 33
31	Onset,	26 85	–	405 00	3	378 15*d*	1,275 13	896 98
32	Pittsfield,	3,779 66*d*	–	–	–	3,779 66*d*	1,216 23*d*	4,995 89*d*
33	Plum Island,	711 13	1,863 10	2,800 00	7	3,951 97*d*	5,515 12	1,563 15
34	Quincy,	396 34	–	–	–	396 34	–	396 34
35	Quincy & Boston,	–	–	–	–	–	–	–
36	Revere,	2,645 09*d*	–	–	–	2,645 09*d*	–	2,645 09*d*
37	Somerville,	9,180 00	–	9,180 00	6	–	–	–
38	South Boston,	27,045 46	–	24,000 00	8‖	3,045 46	70,574 61	73,620 07
39	Springfield,	6,285 87	396 65	–	–	5,889 22[1]	[6]130,855 73*d*	124,966 51[1]
40	Suburban,	–	–	–	–	–	–	–
41	Taunton,	1,992 25	977 57	–**	6**	1,014 68	**3,742 30	4,756 98
42	Union,	21,614 79	5,607 83	–	–	16,006 96	††11,601 57	27,608 53
43	Waltham & Newton,	2,631 61	–	–	–	2,631 61	6,242 42	8,874 03
44	West End,	786,591 14	196,079 89	473,321 67[7]	8[7]	117,189 58	261,922 57[8]	379,112 15
45	Winnisimmet,	3,000 00	–	3,000 00	6.	–	123 35	123 35
46	Worcester Consolidated,	31,615 56	11,622 20	21,000 00	6	1,006 64*d*	11,431 61	10,424 97
	Totals,	$1,096,852 79	$311,845 21	$625,616 67	–	$159,390 91	$952,099 81	$1,111,490 72

[1] Nov. 12, 1887. *d* Deficit.

[2] Surplus last year, $187,438.17. Deduct: cars reduced in value, $12,750; horses reduced in value, $10,396.48; accounts reduced in value, $182,637.44; accounts payable not on books at time of consolidation, $62,020.09 = $267,804.01. Deficit as so changed, $80,365.84. [3] Nov. 19, 1887.

[4] Surplus last year, $47,332.88. Deduct: cars reduced in value, $77,137.50; horses reduced in value, $21,679.48; accounts payable not on books at time of consolidation, $26,421.49 = $125,238.47. Deficit as so changed, $77,905.59.

[5] Surplus last year, $841,970.15. Add: contingent fund, $3,719.95 = $845,690.10. Deduct: cars reduced in value, $108,587.50; horses reduced in value, $39,409.90; worthless accounts, $615.64; accounts payable not on books at time of consolidation, $39,255.44 = $187,868.48. Surplus as so changed, $657,821.62.

[6] Deficit last year, $67,949.25. Deduct: cars reduced in value, $1,700; horses reduced in value, $9,107; worthless accounts, $1,347.50; accounts payable not on books at time of consolidation, $50,751.98 = $62,906.48. Deficit as so changed, $130,855.73.

[7] For 10½ months on preferred stock, 8 per cent., and 5 per cent. on common stock = preferred dividend, $452,266.67; common dividend, $21,055. Balance of preferred dividend for year ($59,733.33) charged directly to surplus account.

[8] Surplus of assets, Nov. 12, 1887, as per the accounts of the various roads consolidated with this company, $368,935.90. Deduct: balance of dividend on preferred stock, $59,733.33; illegally issued South Boston R. R. Co. stock purchased for $47,280 = $107,013.33. Surplus as so changed, $261,922.57.

* $1,171.89 deducted for depreciation in property accounts. † Deficit at commencement of year, $5,236.16. Add: depreciation of track and equipment, $5,660.

‡ On $25,000 capital stock. § On $15,000 capital stock. ‖ On $300,000 capital stock. ¶ On $75,000 capital stock.

** Six per cent. dividend — $3,600 on $60,000 capital stock — paid from last year's surplus. †† $1,136.64 deducted for bills contracted prior to consolidation.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	EQUIPMENT.				LENGTH OF ROAD.		
		47.—Cars.	48.—Other Vehicles.	49.—Horses.	50.—Harnesses.	51.—Main Line.	52. Sidings.	53.—Total Length.
1	Albany Street Freight,	–	–	–	–	.856	.076	.932
2	Arlington,	–	–	–	–	–	–	–
3	Brockton,	35	–	141	29	10.566	.896	11.462
4	Black Rocks & Salisbury Beach,	11	–	4	7	5.854	.140	5.994
5	Boston & Chelsea,	–	–*	–	–	4.116	.038	4.154
6	Boston Consolidated,	–	–	–	–	–	–	–
7	Cambridge,	–	–	–	–	–	–	–
8	East Middlesex,	57	1	215	51	15.120	.891	16.011
9	East Side,	–	–	–	–	4.250	.250	4.500
10	East Wareham, Onset Bay & Point Independence,	4	1	7	10	1.666	.113	1.779
11	Fitchburg,	10	1	37	55	4.124	.253	4.377
12	Framingham Union,	–	–	–	–	–	–	–
13	Globe,	61	5	249	60	13.227	3.270	16.497
14	Gloucester,	13	–	72	45	4.140	.370	4.510
15	Haverhill & Groveland,	38	5	83	51	12.558	1.416	13.974
16	Holyoke,	15	6	56	13	4.045	1.112	5.157
17	Hoosac Valley,	9	1	32	16	5.953	.279	6.232
18	Lowell,	59	7	203	44	12.309	1.288	13.597
19	Lowell & Dracut,	27	–	100	30	8.314	.679	8.993
20	Lynn & Boston,	215	7	840	234	45.135	3.115	48.250
21	Marlborough,	–	–	–	–	–	–	–
22	Malden & Melrose,	–	–	–	–	6.287	.473	6.760
23	Merrimack Valley,	27	4	106	20	7.550	.900	8.450
24	Metropolitan,	–	–	–	–	–	–	–

25	Naumkeag,	107	23	358	170	33.360	3.849	37.209
26	Natick & Cochituate,	7	4	21	5	3.000	.200	3.200
27	Newton,	–	–	–	–	–	–	–
28	Newburyport & Amesbury,	23	4	91	38	11.600	.240	11.840
29	Northampton,	8	2	40	10	3.200	.030	3.230
30	North Woburn,	10	–	51	9	7.340	.210	7.550
31	Onset,	6	–†	1	1	1.300	.125	1.425
32	Pittsfield,	10	1	42	15	3.300	.320	3.620
33	Plum Island,	9	1	17	8	5.200	.400	5.600
34	Quincy,	9	–	–‡	–‡	4.260	.260	4.520
35	Quincy & Boston,	–	–	–	–	–	–	–
36	Revere,	2	–	–§	–	.640	.100	.740
37	Somerville,	–	–	–	–	4.879	.526	5.405
38	South Boston,	56	10	230	50	18.090	.310	18.400
39	Springfield,	–	–	–	–	–	–	–
40	Suburban,	–	–	–	–	–	–	–
41	Taunton,	23	–	101	24	7.389	1.295	8.684
42	Union,	78	3	253	64	14.849	1.533	16.382
43	Waltham & Newton,	9	5	21	7	3.211	.190	3.401
44	West End,	1,584	343	7,684	2,400	229.410	1.751	231.161
45	Winnisimmet,	–	–	–	–	1.884	.131	2.015
46	Worcester Consolidated,	66	5	336	52*	14.611	1.196	15.807
	Totals,	2,588	439	11,391	3,518	533.593	28.225	561.818

* One dummy engine and one motor.
‡ Horses, drivers and conductors furnished by contract.
† Two Baldwin motors.
§ Operated by electricity.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	MILEAGE, ETC.					ACCIDENTS.	
		54. — Miles run.	55. — Passengers Carried.	56. — Round Trips.	57. — Average No. of Passengers per Round Trip.	58. — Persons Employed.	59. — Fatal.	60. — Injured.
1	Albany Street Freight,	–	–	–	–	–	–	–
2	Arlington,	–	–	–	–	–	–	–
3	Brockton,	307,889	1,590,383	24,631	65	55	–	–
4	Black Rocks & Salisbury B'h,	11,380	113,890	2,400	47	11	–	–
5	Boston & Chelsea,	–	–	–	–	–	–	–
6	Boston Consolidated,[1]	427,835	2,891,648	50,178	–	–	–	2
7	Cambridge,[2]	380,939	2,376,376	45,398	–	–	–	5
8	East Middlesex,	212,955	985,525	35,459	28	45	–	5
9	East Side,	–	–	–	–	–	–	–
10	East Wareham, Onset Bay & Point Independence,	3,318	23,609	996	–	5	–	–
11	Fitchburg,	85,641	409,981	18,370	22	–	–	–
12	Framingham Union,	–	–	–	–	–	–	–
13	Globe,	435,416	2,598,922	103,657	25	86	–	5
14	Gloucester,	116,533	577,142	18,767	31	30	–	1
15	Haverhill & Groveland,	149,676	754,155	24,949	30	30	–	–
16	Holyoke,	113,483	478,726	29,633	16	25	–	–
17	Hoosac Valley,	78,180	334,027	6,515	51	13	–	–
18	Lowell,	403,598	2,146,922	42,708	50	117	–	1
19	Lowell & Dracut,	196,859	724,379	37,080	20	54	2	–
20	Lynn & Boston,	1,539,479	9,286,034	177,946	52	348	1	10
21	Marlborough,	–	–	–	–	–	–	–
22	Malden & Melrose,	–	–	–	–	–	–	–
23	Merrimack Valley,	251,865	1,187,862	55,970	21	45	–	–
24	Metropolitan,[1]	943,439	5,706,293	146,611	–	–	1	14

25	Naumkeag,	567,877	3,950,275	85,215	46	150	–	5
26	Natick & Cochituate,	40,386	248,620	6,731	37	8	–	–
27	Newton,	–	–	–	–	–	–	–
28	Newburyport & Amesbury,	1,314,211	872,624	10,041	86	38	–	–
29	Northampton,	50,903	211,776	7,954	27	12	–	–
30	North Woburn,	56,965	280,663	5,746	49	15	–	–
31	Onset,	2,644	21,979	1,175	–	7	–	–
32	Pittsfield,	43,874	309,254	8,538	36	15	–	–
33	Plum Island,	29,140	98,691	2,914	34	8	–	–
34	Quincy,	24,566	103,528	3,476	–	4	–	–
35	Quincy & Boston,	–	–	–	–	–	–	–
36	Revere,	2,400	12,709	–	–	4	–	–
37	Somerville,	–	–	–	–	–	–	–
38	South Boston,[1]	168,078	1,221,880	25,962	–	–	–	2
39	Springfield,	475,352	2,714,653	93,023	29	122	1	3
40	Suburban,	–	–	–	–	–	–	–
41	Taunton,	180,500	789,784	49,257	16	28	1	–
42	Union,	505,238	2,540,671	118,100	22	95	–	4
43	Waltham & Newton,	43,680	277,447	6,753	41	9	–	–
44	West End,	13,495,511	84,843,722	1,860,770	46	4,000	4	158
45	Winnisimmet,	–	–	–	–	–	–	–
46	Worcester Consolidated,	584,957	3,794,169	113,655	33	154	–	2
	Totals,	23,244,767	134,478,319	3,220,578	–	5,531	10	217

[1] From Oct. 1 to Nov. 12, 1887.

[2] From Oct. 1 to Nov. 19, 1887.

COMPARATIVE STATEMENTS FROM STREET RAILWAY RETURNS.

	STREET RAILWAYS.	PER MILE OF ROAD OWNED.			PER MILE OF ROAD OPERATED.			
		61.—Capital Stock Paid in	**62.**—Net Debt.	**63.**—Cost of Construction.	**64.**—Cost of Equipment	**65.**—Repairs of Road-bed and Track.	**66.**—Repairs of Equipment.	**67.**—Renewals Horses.
1	Albany Street Freight,	$58,411 20	–	$57,320 40	–	–	–	–
2	Arlington,	–	–	–	–	–	–	–
3	Brockton,	14,196 48	$14,534 49	16,143 34	$4,869 61	$28 07	$268 72	$127 53
4	Black Rocks & Salisbury Beach,	7,687 05	–	5,291 38	1,181 33	–	173 34	–
5	Boston & Chelsea,	29,397 47	–	29,397 47	–	–	–	–
6	Boston Consolidated,	37,573 21	31,237 79	26,670 39	12,058 64	–	–	–
7	Cambridge,	35,328 42	13,902 75	25,031 97	8,492 46	–	–	–
8	East Middlesex,	13,227 51	9,957 44	14,243 53	4,451 05	130 51	181 22	167 91
9	East Side,	–	–	–	–	–	–	–
10	East Wareham, Onset Bay and Point Independence,	–	–	–	–	–	–	–
11	Fitchburg,	14,548 98	2,609 26	13,568 40	3,427 50	92 54	277 54	–
12	Framingham Union,	–	–	–	–	–	–	–
13	Globe,	22,680 88	905 03	15,640 09	5,053 86	700 36	648 98	372 97
14	Gloucester,	14,492 75	7,617 55	10,674 35	6,573 55	443 20	534 54	154 14
15	Haverhill & Groveland,	11,466 79	–	5,781 89	3,086 56	316 49	290 04	60 70
16	Holyoke,	12,360 94	4,048 88	10,310 83	5,390 15	144 49	401 21	294 19
17	Hoosac Valley,	8,399 13	11,331 72	15,826 84	2,677 61	28 20	49 13	79 79
18	Lowell,	8,124 14	7,494 60	11,612 16	4,966 20	57 29	480 44	–
19	Lowell & Dracut,	7,216 74	10,483 22	11,048 24	4,082 79	–	188 92	–
20	Lynn & Boston,	8,862 30	9,788 50	11,310 32	3,962 10	478 94	726 01	348 48
21	Marlborough,	–	–	–	–	–	–	–
22	Malden & Melrose,	26,324 16	–	21,324 16	–	–	–	–
23	Merrimack Valley,	6,622 50	309 09	3,973 51	2,450 33	430 97	570 68	157 62
24	Metropolitan,	23,449 41	17,275 08	20,502 81	9,761 37	–	–	–

25	Naumkeag,	7,494 00	13,220 65	15,015 15	3,942 32	115 28	304 91	240 92
26	Natick & Cochituate,	8,333 34	–	7,183 34	2,380 84	860 21	–	113 50
27	Newton,	–	–	–	–	–	–	–
28	Newburyport & Amesbury,	10,344 83	7,835 22	11,687 51	4,550 84	95 61	153 45	186 90
29	Northampton,	15,625 00	1,538 39	11,250 00	2,718 75	371 16	730 17	526 64
30	North Woburn,	13,623 98	1,823 70	11,785 21	2,510 52	38 77	102 51	41 53
31	Onset,	–	–	–	–	–	–	–
32	Pittsfield,	13,063 64	3,839 70	8,557 36	4,681 64	218 46	325 41	–
33	Plum Island,	7,692 31	8,969 84	10,430 74	2,190 11	130 05	102 49	–
34	Quincy,	–	–	–	–	–	–	–
35	Quincy & Boston,	–	–	–	–	–	–	–
36	Revere,	–	–	–	–	–	–	–
37	Somerville,	31,358 90	–	31,358 90	–	–	–	–
38	South Boston,	57,625 82	33,558 31	25,113 94	17,371 83	–	–	–
39	Springfield,	19,347 70	–	11,193 55	4,652 78	458 66	540 73	175 93
40	Suburban,	–	–	–	–	–	–	–
41	Taunton,	13,531 80	3,813 47	9,824 11	4,702 23	252 19	667 71	–
42	Union,	17,509 60	5,442 43	13,850 17	6,318 16	236 66	444 37	–
43	Waltham & Newton,	9,342 88	3,865 25	11,676 55	3,121 88	489 43	96 50	–
44	West End,	29,733 22	19,482 59	21,881 64	10,642 05	712 54	1,085 75	319 09
45	Winnisimmet,	26,544 91	–	26,544 91	–	–	–	–
46	Worcester Consolidated,	23,954 55	13,448 91	20,519 43	8,373 00	292 99	1,057 63	233 31
	Average,[1]	$20,417 90	$11,885 90	$16,920 79	$7,086 22	$578 86	$874 02	$267 51

[1] Arlington, Boston Consolidated, Cambridge, Metropolitan, South Boston and Suburban not included.

COMPARATIVE STATEMENTS FROM STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	Gross Income.				Expenses.	
		68. — Per Mile Operated.	**69.** — Per Round Trip.	**70.** — Per Mile Run.	**71.** — Per Passenger Carried.	**72.** — Per Mile Operated.	**73.** — Per Round Trip.
1	Albany Street Freight,	–	–	–	–	–	–
2	Arlington,	–	–	–	–	–	–
3	Brockton,	$7,135 65	$3 06	$0.2448	$0.0474	$5,235 18	$2 24
4	Black Rocks & Salisbury Beach,	1,705 73	4 16	.8775	.0877	909 36	2 22
5	Boston & Chelsea,	–	–	–	–	–	–
6	Boston Consolidated,	–	–	–	–	–	–
7	Cambridge,	–	–	–	–	–	–
8	East Middlesex,	3,038 61	1 70	.2833	.0612	3,153 38	1 77
9	East Side,	–	–	–	–	–	–
10	East Wareham, Onset Bay & Pt. Independence,	–	–	–	–	–	–
11	Fitchburg,	6,045 64	1 36	.2899	.0608	5,246 94	1 18
12	Framingham Union,	–	–	–	–	–	–
13	Globe,	9,798 80	1 25	.2980	.0498	8,339 98	1 06
14	Gloucester,	7,476 28	1 65	.2645	.0536	7,249 39	1 60
15	Haverhill & Groveland,	3,825 48	1 92	.3203	.0637	3,393 75	1 71
16	Holyoke,	6,269 47	86	.2244	.0529	7,146 89	98
17	Hoosac Valley,	3,153 30	2 89	.2401	.0562	2,365 13	2 13
18	Lowell,	7,883 76	2 54	.2687	.0506	7,066 80	2 28
19	Lowell & Dracut,	3,637 91	96	.1805	.0491	3,521 72	93
20	Lynn & Boston,	8,900 70	2 75	.3184	.0527	7,895 98	2 44
21	Marlborough,	–	–	–	–	–	–
22	Malden & Melrose,	–	–	–	–	–	–
23	Merrimack Valley,	8,244 20	1 11	.2470	.0524	6,735 23	91
24	Metropolitan,	–	–	–	–	–	–
25	Naumkeag,	6,116 81	2 39	.3593	.0517	4,813 66	1 88

26	Natick & Cochituate,	5,204 65	2 32	.3903	.0627	3,750 72	1 67
27	Newton,	–	–	–	–	–	–
28	Newburyport & Amesbury,	3,808 49	4 40	.3373	.0506	3,003 92	3 47
29	Northampton,	5,276 16	2 12	.3317	.0796	5,251 48	2 11
30	North Woburn,	2,011 71	2 73	.2753	.0558	1,744 11	2 37
31	Onset,	–	–	–	–	–	–
32	Pittsfield,	4,901 48	1 90	.3676	.0523	6,046 83	2 34
33	Plum Island,	1,769 36	3 15	.5157	.0929	1,632 60	2 90
34	Quincy,	–	–	–	–	–	–
35	Quincy & Boston,	–	–	–	–	–	–
36	Revere,	–	–	–	–	–	–
37	Somerville,	–	–	–	–	–	–
38	South Boston,	–	–	–	–	–	–
39	Springfield,	8,058 62	1 57	.3069	.0537	6,563 57	1 27
40	Suburban,	–	–	–	–	–	–
41	Taunton,	5,190 61	78	.2119	.0485	4,921 02	74
42	Union,	7,918 89	1 00	.2328	.0463	6,463 25	81
43	Waltham & Newton,	4,566 60	2 17	.3357	.0529	3,747 04	1 78
44	West End,	17,388 98	2 30	.3169	.0504	14,190 44	1 88
45	Winnisimmet,	–	–	–	–	–	–
46	Worcester Consolidated,	12,462 87	1 60	.3113	.0480	10,299 05	1 32
	Average,[1]	$12,451 23	$2 13	$0.2951	$0.0510	$10,460 54	$1 79

[1] Arlington, Boston Consolidated, Cambridge, Metropolitan, South Boston and Suburban not included.

COMPARATIVE STATEMENTS OF STREET RAILWAY RETURNS — Concluded.

	STREET RAILWAYS.	Expenses — Continued.		Net Income.			
		74. — Per Mile Run.	75.—Per Passenger Carried.	76. — Per Mile Operated.	77.— Per Round Trip.	78.—Per Mile Run.	79.—Per Passenger Carried.
1	Albany Street Freight,	–	–	–	–	–	–
2	Arlington,	–	–	–	–	–	–
3	Brockton,	$0.1796	$0.0348	$1,900 47	$0.82	$0.0652	$0.0126
4	Black Rocks & Salisbury Beach,	.4678	.0467	796 37	.194	.4097	.0410
5	Boston & Chelsea,	–	–	–	–	–	–
6	Boston Consolidated,	–	–	–	–	–	–
7	Cambridge,	–	–	–	–	–	–
8	East Middlesex,	.2940	.0635	114 77[1]	.07[1]	.0107[1]	.0023[1]
9	East Side,	–	–	–	–	–	–
10	East Wareham, Onset Bay & Pt. Independence,	–	–	–	–	–	–
11	Fitchburg,	.2516	.0528	798 70	.18	.0383	.0080
12	Framingham Union,	–	–	–	–	–	–
13	Globe,	.2536	.0424	1,458 82	.19	.0444	.0075
14	Gloucester,	.2565	.0520	226 89	.05	.0080	.0016
15	Haverhill & Groveland,	.2841	.0565	431 73	.21	.0362	.0072
16	Holyoke,	.2558	.0603	877 34[1]	.12[1]	.0314[1]	.0074[1]
17	Hoosac Valley,	.1801	.0422	788 17	.73	.0600	.0140
18	Lowell,	.2409	.0453	816 96	.26	.0278	.0053
19	Lowell & Dracut,	.1747	.0475	116 19	.03	.0058	.0016
20	Lynn & Boston,	.2825	.0468	1,004 72	.31	.0359	.0059
21	Marlborough,	–	–	–	–	–	–
22	Malden & Melrose,	–	–	–	–	–	–
23	Merrimack Valley,	.2018	.0428	1,508 97	.20	.0452	.0096
24	Metropolitan,	–	–	–	–	–	–
25	Naumkeag,	.2827	.0407	1,303 15	.51	.0766	.0110

26	Natick & Cochituate,	.2813	.0452	1,453 93	.65	.1090	.0175
27	Newton,	–	–	–	–	–	–
28	Newburyport & Amesbury,	.2660	.0399	804 57	.93	.0713	.0107
29	Northampton,	.3301	.0792	24 68	.01	.0016	.0004
30	North Woburn,	.2387	.0484	267 60	.36	.0366	.0074
31	Onset,	–	–	–	–	–	–
32	Pittsfield,	.4535	.0646	1,145 35[1]	.44[1]	.0859[1]	.0123[1]
33	Plum Island,	.2913	.0857	136 76	.25	.0244	.0072
34	Quincy,	–	–	–	–	–	–
35	Quincy & Boston,	–	–	–	–	–	–
36	Revere,	–	–	–	–	–	–
37	Somerville,	–	–	–	–	–	–
38	South Boston,	–	–	–	–	–	–
39	Springfield,	.2500	.0437	1,495 05	.30	.0569	.0100
40	Suburban,	–	–	–	–	–	–
41	Taunton,	.2009	.0460	269 58	.04	.0110	.0025
42	Union,	.1900	.0378	1,455 64	.19	.0428	.0085
43	Waltham & Newton,	.2755	.0434	819 56	.39	.0602	.0095
44	West End,	.2586	.0411	3,198 54	.42	.0583	.0093
45	Winnisimmet,	–	–	–	–	–	–
46	Worcester Consolidated,	.2572	.0397	2,163 82	.28	.0541	.0083
	Totals,	$0.2479	$0.0428	$1,990 69	$0.34	$0.0472	$0.0082

[1] Deficit.

TABULATED STATEMENT

COMPILED FROM

RETURNS OF RAILROADS.

RAILROADS AND BRANCHES. (Branches in Italics.)	Where Located.		Length.		Double Track.		Sidings.		7.—Total length computed as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
Attleborough Branch. (See *Old Colony*),	–	–	–	–	–	–	–	–	–
Berkshire. (See *Housatonic*),	–	–	–	–	–	–	–	–	–
Boston & Albany,	Boston,	Albany, N. Y.,	201.650	162.350	162.350	39.300	197.180	33.970	753.270
Athol,	Springfield,	Athol,	46.510	46.510	–	–	–	–	–
Grand Junction,	Cottage Farm,	East Boston,	9.300	9.300	5.020	–	–	–	–
Newton Lower Falls,	Riverside Jct.,	Newton L. Falls,	1.100	1.100	–	–	–	–	–
Newton Highlands,	Beacon St., Boston,	Riverside Jct.,	9.930	9.930	9.930	–	–	–	–
Saxonville,	Natick,	Saxonville,	3.700	3.700	–	–	–	–	–
Milford,	S. Framingham,	Milford,	12.	12.	–	–	–	–	–
Millbury,	Millbury Jct.,	Millbury Village,	3.	3.	–	–	–	–	–
Chatham & Hudson,	Chatham, N. Y.,	Hudson, N. Y.,	17.330	–	–	1.	–	–	–
North Brookfield,	E. Brookfield,	N. Brookfield,	4.160	4.160	–	–	.490	–	4.650
Pittsfield & North Adams,	Pittsfield,	North Adams,	18.550	18.550	–	–	5.130	–	23.680
Prov., Webster & Springfield,	North Webster,	Auburn Station,	11.120	11.120	–	–	1.640	–	12.760
Ware River,	Palmer,	Winchendon,	49.350	49.350	–	–	5.860	–	55.210
Spencer,	Spencer,	B. & A. R R.,	2.165	2.165	–	–	.745	–	2.910
Boston & Maine,	Boston,	Portland, Me.,	115.500	36.750	36.250	34.710	55.707	45.759	297.426
Medford,	Malden Jct.,	Medford,	2.	2.	–	–	–	–	
Methuen,	Lawrence,	Methuen (State Line of N. H.),	3.750	3.750	1.	–	–	–	–
Great Falls,	Rollinsf'd, N.H.,	Gt. Falls, N. H.,	2.750	–	–	–	–	–	–
Danvers,	Wakefield Jct.,	Danvers,	9.259	9.259	–	–	1.289	–	10.548
Lowell & Andover,	Lowell,	Lowell Jct.,	8.730	8.730	8.730	–	3.940	–	22.770
Branch to Framingham & Lowell R.R.,	–	In Lowell,	1.150	1.150	–	–	–	–	–
Branch to Boston & Lowell Railroad,	–	In Lowell,	.220	.220	–	–	–	–	–

Newburyport, . .	Bradford, . .	Newburyport, .	26.979	26.979	–	–	3.132	–	30.111
West Amesbury Branch, .	Georgetown, .	Danvers, . .							
Worcester, Nashua & Rochester, ...	W. Amesbury, .	Newton, N. H., .	4.450	2.130	–	–	.110	.380	4.940
Eastern, ...	Worcester, .	Rochester, N.H.,	94.480	39.460	18.130	–	13.160	8.060	133.830
East Boston, . .	Boston, . .	State Line, N.H.,	41.450	41.450	27.920	–	72.100	–	223.150
Saugus, . . .	Revere, . .	East Boston, .	3.470	3.470	1.560	–	–	–	–
Marblehead, . .	Everett, . .	West Lynn, .	9.550	9.550	–	–	–	–	–
Swampscott, . .	Salem, . .	Marblehead, .	3.520	3.520	–	–	–	–	–
Lawrence, . . .	Swampscott, .	Marblehead, .	3.960	3.960	–	–	–	–	–
Gloucester, . .	Salem, . .	Lawrence, .	19.890	19.890	1.640	–	–	–	–
Salisbury, . . .	Beverly, . .	Rockport, . .	16.940	16.940	–	–	–	–	–
Asbury Grove, . .	Salisbury, . .	Amesbury, .	3.790	3.790	–	–	–	–	–
Essex, . . .	Hamilton Sta'n,	Asbury Grove, .	1.060	1.060	–	–	–	–	–
Charlestown, . .	Wenham, . .	Essex, . .	6.000	6.000	–	–	–	–	–
South Reading, . .	–	In Charlestown,	1.090	1.090	1.090	–	–	–	–
Chelsea Beach, . . .	Peabody, . .	Wakefield Jct., .	8.120	8.120	–	–	–	–	–
Newburyport City, . .	Oak Island Jct.,	Saugus River J.,	1.780	1.780	–	–	.540	–	2.320
Boston & Lowell, . . .	E. & B. & M.R.R.,	Wharves, . .	2.080	2.080	.150	–	1.800	–	4.030
Lexington & Arlington,	Boston, . .	Lowell, . .	26.750	26.750	26.750	–	63.920	–	204.210
Stoneham, . . .	Medford Jct., .	Lexington, .	9.250	9.250	9.250	–	–	–	–
Woburn, . . .	Woburn Jct., .	Stoneham, .	2.500	2.500	–	–	–	–	–
Mystic, . . .	Winchester, .	N. Woburn Jct.,	6.200	6.200	6.200	–	–	–	–
Lawrence, . . .	Milk Row Jct., .	Mystic Wharves,	2.250	2.250	–	–	–	–	–
Middlesex Central, .	–	In Wilmington,	3.210	3.210	–	–	–	–	–
Salem & Lowell, .	Lexington, .	Concord, . .	11.080	11.080	–	–	–	–	–
Lowell & Lawrence, .	Tewksbury, .	Peabody, . .	16.800	16.800	–	–	–	–	–
Bedford & Billerica, .	Lowell, . .	S. Lawrence, .	12.420	12.420	–	–	–	–	–
Horn Pond Branch, . .	Bedford, . .	Billerica, . .	7.630	7.630	–	–	–	–	–
Nashua & Lowell, . .	Woburn Branch,	Horn Pond, .	.663	.663	–	–	.076	–	.739
Stony Brook, . . .	Lowell, . .	Nashua, N. H., .	14.500	9.250	9.250	5.250	4.134	1.950	35.084
Central Massachusetts. .	N. Chelmsford, .	Ayer, . .	13.160	13.160	–	–	.950	–	14.110
	No. Cambridge,	Northampton, .	98.770	98.770	–	–	14.330	–	113.100

RAILROADS AND BRANCHES. (BRANCHES IN ITALICS.) (Continued.)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length computed as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
BOSTON & PROVIDENCE. (See *Old Colony*),	–	–	–	–	–	–	–	–	–
CENTRAL MASSACHUSETTS. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
CHATHAM. (See *Old Colony*),	–	–	–	–	–	–	–	–	–
CHESHIRE,	S. Ashburnham,	Bellows Falls, Vt.,	53.620	10.810	–	–	3.170	14.120	70.910
Monadnock,	Winchendon,	Peterboro', N.H.,	15.800	2.038	–	–	–	.700	16.500
CHELSEA BEACH. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
CONNECTICUT RIVER,	Springfield,	S. Vernon, Vt.,	50.	50.	36.000	–	43.680	–	135.530
Chicopee Falls,	Chicopee,	Chicopee Falls,	2.350	2.350	–	–	–	–	–
Easthampton,	Mt. Tom Jct.,	Easthampton,	3.500	3.500	–	–	–	–	–
DANVERS. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
EASTERN. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
FALL RIVER. (See *Old Colony*),	–	–	–	–	–	–	–	–	–
FALL RIVER, WARREN & PROVIDENCE (owned by *Old Colony Railroad Co.*),	Fall River,	Warren, R. I.,	5.794	3.662	–	–	.040	.480	6.314
FITCHBURG,	Boston,	Fitchburg,	50.	50.	94.	6.560	139.510	41.050	580.850
	Greenfield,	Troy, N.Y. and Rot'dam J., N.Y.	139.960	44.					
Ashburnham,	–	In Ashburnham,	2.590	2.590	–	–	–	–	–
Ice,	–	In Charlestown,	.680	.680	.680	–	–	–	–
Watertown Branch,	No. Cambridge,	Waltham,	8.260	8.260	–	–	–	–	–
Marlborough,	South Acton,	Marlborough,	12.420	12.420	–	–	–	–	–
Peterborough & Shirley,	Ayer,	Greenville, N.H.,	23.620	14.250	–	–	–	–	–

Worcester,	Worcester,	Winchendon,	36.	36.	–	–	–	–	–
Saratoga,	Saratoga, N. Y.,	Schuylerville, N. Y.,	25.520	–	–	–	–	–	–
Vermont & Massachusetts,	Fitchburg,	Greenfield,	56.	56.	56.000	–	28.100	–	142.900
Turner's Falls,	Greenfield,	Turner's Falls,	2 800	2.800	–	–	–	–	–
GRAFTON & UPTON,	Grafton Station,	Grafton Centre,	3.	3.	–	–	.100	–	3.100
HOLYOKE & WESTFIELD. (See *N. Haven & Northampton*),	–	–	–	–	–	–	–	–	–
HORN POND BRANCH. (See *Boston & Lowell*),	–	–	–	–	–	–	–	–	–
HOUSATONIC (Ct.),	–	–	–	–	–	–	–	–	–
Berkshire,	W. Stockbridge,	State Line of Ct.,	21.030	21.030	–	–	4.490	–	25.520
Stockbridge and Pittsfield,	Vandeusenville,	Pittsfield,	22.930	22.930	–	–	4.990	–	27.920
West Stockbridge,	W. Stockbridge,	State Line, N.Y.,	2.640	2.640	–	–	2.380	–	5.020
LOWELL & ANDOVER. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
MILFORD, FRANKLIN & PROV. (See *N. Y. & N. E.*),	–	–	–	–	–	–	–	–	–
MILFORD & WOONSOCKET. (See *N. Y. & N. E.*),	–	–	–	–	–	–	–	–	–
MONADNOCK. (See *Cheshire*),	–	–	–	–	–	–	–	–	–
NANTASKET BEACH. (See *Old Colony*),	–	–	–	–	–	–	–	–	–
NASHUA, ACTON & BOSTON (operated by *Concord, N. H.*),	Acton,	Nashua, N. H.,	20.210	15.460	–	–	.850	1.680	22.740
NASHUA & LOWELL. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
NEWBURYPORT. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
NEWBURYPORT CITY. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
NEW LONDON NORTHERN (operated by J. Gregory Smith and others),	New London, Ct.,	Brattleboro', Vt.,	121.	54.	–	–	10.080	17.240	148.320

RAILROADS AND BRANCHES. (BRANCHES IN ITALICS.) (Continued.)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length computed as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
NEW YORK & NEW ENGLAND,	Boston,	Hopewell Jct., N.Y.,	214.960	52.050	52.050	56.050	46.330	90.270	604.840
	Hopewell Jct.,	Fishkill-on-Hud.,	1.710	–	–	–	–	–	–
	Providence,	Willimantic, Ct.,	58.320	–	–	–	–	–	–
Woonsocket Division,	Newton Hl'ds,	Woonsocket, R.I.,	28.620	27.600	–	–	–	–	–
Southbridge,	E. Thompson, Ct.,	Southbridge,	17.360	12.010	–	–	–	–	–
Dedham,	Elmwood Jct.,	Dedham,	1.530	1.530	–	–	–	–	–
Dorrance Street,	–	In Providence,	.620	–	–	–	–	–	–
Ridge Hill,	–	–	1.650	1.650	–	–	–	–	–
Hartford Freight,	–	In Hartford,	.670	–	–	–	–	–	–
Springfield Division,	East Hartford,	Springfield,	27.480	7.310	–	–	–	–	–
Branch,	Melrose, Ct.,	West St., Ct.,	7.220	–	–	–	–	–	–
Norwich & Worcester,	Worcester,	Allyn's Point, Ct.,	65.730	18.240	–	–	7.600	13.400	87.160
	Norwich, Ct.,	N. L. N. R.R., Ct.,	.430						
Milford & Woonsocket,	Ashland,	Bellingham,	15.327	15.327	–	–	1.900	–	17.227
Milford, Franklin & Prov.,	Franklin,	Bellingham,	4.600	4.600	–	–	.407	–	5.007
Rhode Island & Mass.,	Franklin,	State Line of R. I.	6.620	6.620	–	–	1.006	–	7.626
NEW YORK, NEW HAVEN & HARTFORD,	Harlem Jct., N.Y.	Springfield,	122.440	5.950	5.950	116.490	4.860	109.970	379.750
N. Britain (Ct.),	Berlin, Ct.,	New Britain, Ct.,	3.180	–	–	–	–	–	–
Middletown (Ct.),	Berlin, Ct.,	Middletown, Ct.,	9.700	–	–	–	–	–	–
Suffield (Ct.),	Windsor Locks,	Suffield, Ct.,	4.320	–	–	–	–	–	–
Freight Branch,	–	In Hartford,	.840	–	–	–	–	–	–
Belle Dock,	–	In New Haven,	1.000	–	–	–	–	–	–
New Haven & Northampton,	New Haven, Ct.,	Conway Jct.,	94.640	43.380	–	–	18 300	13.900	159.550
Collinsville (Ct.),	Farmington, Ct.,	N. Hartford, Ct.,	14.090	–	–	–	–	–	–
Tariffville,	Simsbury, Ct.,	Tariffville, Ct.,	1.040	–	–	–	–	–	–
Northampton,	Northampton,	Williamsburg,	7.510	7.510	–	–	–	–	–
Turner's Falls,	So. Deerfield,	Turner's Falls,	10.070	10.070	–	–	–	–	–
Holyoke & Westfield,	Westfield,	Holyoke,	14.320	14.320	–	–	–	–	17.220
Mill Branches,	–	In Holyoke,	2.900	2.900	–	–	–	–	–

New Haven & Northampton. (See *N. Y., N. H & H'tf'd*),	–	–	–	–	–	–	–	–	–
Norwich & Worcester. (See *N. Y. & N. E.*),	–	–	–	–	–	–	–	–	–
North Brookfield. (See *Boston & Albany*),	–	–	–	–	–	–	–	–	–
Old Colony,	Boston,	Provincetown,	120.010	352.700	101.710	–	169.810	2.490	743.540
	S. Braintree,	Plymouth,	26.040						
	Braintree,	Kingston,	32.340						
	May Flower P'k,	Newport,	55.020						
	Middleborough,	Somerset Jct.,	14.960						
	Raynham,	Whittenton Jct.,	3.380						
	Fitchburg,	New Bedford,	91.020						
	So. Framingham,	Lowell,	26.120						
Middleboro' & Taunton,	Middleborough,	Taunton,	8.040	8.040	–	–	–	–	–
Stoughton,	–	In Stoughton,	1.650	1.650	–	–	–	–	–
Bridgewater,	S. Abington,	Bridgewater,	6.120	6.120	–	–	–	–	–
Brockton,	–	–	.750	.750	–	–	–	–	–
Granite,	Atlantic,	Braintree,	5.410	5.410	–	–	–	–	–
Wood's Holl,	Buzzard's Bay,	Wood's Holl,	17.540	17.540	–	–	–	–	–
Hyannis,	Yarmouth,	Hyannis,	5.050	5.050	–	–	–	–	–
Shawmut,	Harrison Sq.,	Milton L. Mills,	2.390	2.390	–	–	–	–	–
Connection with F. R., W. & P. R. R.,	Bowenville St'n,	–	2.160	2.160	–	–	–	–	–
Marlborough,	S. Marlborough,	Marlborough,	1.470	1.470	–	–	–	–	–
Acushnet,	–	In New Bedford,	.350	.350	–	–	–	–	–
Dorchester & Milton,	Neponset,	Mattapan,	3.300	3.300	–	–	–	–	–
Hanover,	N. Abington,	So. Hanover,	7.800	7.800	–	–	–	–	–
Easton,	–	–	7.560	7.560	–	–	–	–	–
Fairhaven,	Fairhaven,	Tremont Stat'n,	15.170	15.170	–	–	–	–	–
Attleborough,	Taunton,	Attleborough,	8.600	8.600	–	–	–	–	–
Sterling,	Pratts' Junction,	Sterling Jct.,	5.030	5.030	–	–	–	–	–
Lancaster,	–	In Lancaster,	1.630	1.630	–	–	–	–	–
Framingham Prison,	–	In Framingham,	.620	.620	–	–	–	–	–

RAILROADS AND BRANCHES. (BRANCHES IN ITALICS.) (Concluded.)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length computed as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
OLD COLONY—Concluded.									
Boston & Providence, . .	Boston, . .	Providence, R.I.,	44.	38.142	38.142	5.858	40.000	12.000	159.752
West Roxbury, . .	Forest Hills St'n,	Dedham, . .	5.366	5.366	–	–	–	–	–
Dedham, . . .	Readville, . .	Dedham, . .	2.224	2.224	–	–	–	–	–
Stoughton, . . .	Canton, . .	Stoughton, .	4.114	4.114	–	–	–	–	–
India Point, . . .	Seekonk, . .	Providence, R.I.,	8.048	3.485	–	–	–	–	–
Attleborough Branch, . .	Attleborough, .	N. Attleborough,	4.	4.	–	–	1.	–	5.
Fall River, ...	Fall River, .	New Bedford, .	12.250	12.250	–	–	.832	–	13.082
Chatham, ...	Chatham, . .	Harwich, . .	7.000	7.000	–	–	1.000	–	8.000
Nantasket Beach, . . .	Old Col. House,	Pemberton, .	6.933	6.933	–	–	2.535	–	9.468
PITTSFIELD & NORTH ADAMS. (See *Boston & Albany*), .	–	–	–	–	–	–	–	–	–
PROVIDENCE & WORCESTER, .	Providence, R.I.,	Worcester, .	43.410	25.510	24.480	17.900	18.563	25.365	136.718
East Providence, . .	Valley Falls, .	E. Providence, .	7.	.500	–	–	–	–	–
PROV., WEBSTER & SPRINGFIELD. (See *Boston & Albany*), ...	–	–	–	–	–	–	–	–	–
RHODE ISLAND & MASSACHUSETTS. (See *New York & New England*), . .	–	–	–	–	–	–	–	–	–
SPENCER. (See *Boston & Albany*), ...	–	–	–	–	–	–	–	–	–
STOCKBRIDGE & PITTSFIELD. (See *Housatonic*), . .	–	–	–	–	–	–	–	–	–
STONY BROOK. (See *Boston & Maine*), ...	–	–	–	–	–	–	–	–	–
UNION FREIGHT, . . .	B. & L. R. R., .	Old Colony R.R.,	2.431	2.431	.937	–	1.280	–	4.648

VERMONT & MASSACHUSETTS. (See *Fitchburg*),	–	–	–	–	–	–	–	–	–
WARE RIVER. (See *Boston & Albany*),	–	–	–	–	–	–	–	–	–
WEST AMESBURY BRANCH. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
WEST STOCKBRIDGE. (See *Housatonic*),	–	–	–	–	–	–	–	–	–
WORCESTER, NASHUA & ROCHESTER. (See *Boston & Maine*),	–	–	–	–	–	–	–	–	–
NARROW GAUGE.									
BOSTON, REVERE BEACH & LYNN,	East Boston,	Lynn,	8.800	8.800	8.300	8.300	2.700	–	19.800
BOSTON, WINTHROP & SHORE.	Winthrop Jct.,	Point Shirley,	3.600	3.600	–	–	.300	–	10.700
Branch,	Branch Jct.,	Shirley Jct.,	2.000	2.000	–	–	–	–	–
Branch,	Crescent Beach,	Ocean Spray,	2.200	2.200	–	–	–	–	–
Branch,	Crescent Beach,	Point of Pines,	2.600	2.600	–	–	–	–	–
HOOSAC TUNNEL & WILMINGTON,	Hoosac Tunnel,	Readsboro', Vt.,	11.000	8.000	–	–	.500	.500	12.000
MARTHA'S VINEYARD,	Oak Bluffs,	Katama,	8.330	8.330	–	–	.500	–	9.280
Katama,	Katama,	South Beach,	.450	.450	–	–	–	–	–
NANTUCKET,	Nantucket,	Siasconset,	11.160	11.160	–	–	.080	–	11.240
WORCESTER & SHREWSBURY,	Worcester,	L.Quinsigamond,	2.700	2.700	–	–	–	–	2 700
Totals,			3,087.883	2,063.918	743.469	284.118	1,010.026	433.284	5,558.780

	8.—Boston & Albany.	9.—Fitchburg.	10.—Boston & Lowell.	11.—Boston & Maine.
Capital Stock.				
Amount paid in,	$20,000,000 00	$20,525,100 00[1]	$5,529,400 00	$7,000,000 00
Number of stockholders,	6,904	3,919[2]	1,506	3,884
Stockholders in Massachusetts,	5,948	2,924[3]	1,299	2,286
Amount of stock held in Mass achusetts,	$16,956,400 00	$12,532,200 00[4]	$4,927,500 00	$4,665,900 00
Debt.				
Funded debt,	$10,858,000 00	$18,284,600 00	$6,674,400 00	$5,673,000 00
Unfunded debt,	848,133 19	1,488,746 26	799,276 14	4,989,418 76
Total Gross Debt,	11,706,133 19	19,773,346 26	7,473,676 14	10,662,418 76
Permanent Investments.				
Construction,	$25,450,340 54	$32,422,597 46	$6,810,901 21	$9,620,937 63
Equipment,	3,145,400 00	3,523,080 75	823,837 59	1,308,180 00
Other property,	636,094 79	603,592 40	4,103,116 66	1,334,657 07
Total Permanent Investments,	29,231,835 33	36,549,270 61	12,171,801 25	12,263,774 70
Cash and cash assets,	3,072,464 09	4,265,324 65	1,500,466 77	7,304,669 27[5]
Total Property and Assets,	32,304,299 42	40,814,595 26	13,672,268 02	19,568,443 97
Revenue for the Year.				
From local passengers,	$2,367,689 37	$1,226,316 20	$100,244 75[6]	$5,393,048 46
through passengers,	1,248,618 79	459,113 58	295,322 46	1,096,516 08
express and extra baggage,	264,947 87	121,092 22	18,000 00	377,831 42
mails,	150,791 04	43,653 98	23,630 40	156,553 50
other sources passenger department,	31,476 15	30,732 88	–	–
Total earnings passenger department,	4,063,523 22	1,880,908 86	437,197 61	7,023,949 46

From local freight,	2,225,742 16	941,043 08	108,789 58	3,434,942 39
through freight,	2,160,074 36	2,320,323 59	503,597 77	2,265,626 42
other sources freight department,	–	51,045 09	–	–
Total earnings freight department,	4,385,816 52	3,312,411 76	612,387 35	5,700,568 81
TOTAL TRANSPORTATION EARNINGS,	8,449,339 74	5,193,320 62	1,049,584 96	12,724,518 27
From rents for use of road,	–	58,500 00	765,266 95	11,269 62
all other sources,	433,324 08	211,477 38	155,344 49	375,010 24
TOTAL INCOME FROM ALL SOURCES,	8,882,663 82	5,463,298 00	1,970,196 40	13,110,798 13
EXPENSES.				
Transportation expenses,	$5,883,640 66	$4,011,539 65	$879,393 68[7]	$8,621,345 08
Taxes,	588,315 66	185,065 34	32,004 77	632,198 46
TOTAL EXPENSES,	6,471,956 32	4,196,604 99	911,398 45	9,253,543 54
NET INCOME, DIVIDENDS, ETC.				
Net income,	$2,410,707 50	$1,266,693 01	$1,058,797 95	$3,857,254 59
Rents,	78,000 00	281,280 00	298,500 00	2,862,901 84
Interest accrued,	662,900 00	739,103 28	371,208 95	375,863 41
Dividends earned,	1,669,807 50	246,309 73	–	618,489 34
Per cent.,	8.3	–	–	8.8
Dividends declared,	1,600,000 00	261,835 60	387,058 00	700,000 00
Per cent.,	8.0	2.0[8]	7.0	10.0
Balance for the year,	69,807 50	15,525 87[9]	2,031 00	81,510 66[9]
Surplus last year,	617,190 41[9]	281,674 87	656,551 95	1,859,460 58[10]
Surplus Sept, 30, 1888	547,382 91[9]	266,149 00	658,582 95	1,777,949 92

[1] Common, $7,000,000; preferred, $13,775,100.
[2] Common, 2; preferred, 3,917.
[3] Common, 1; preferred, 2,923.
[4] Common, $5,000,000; preferred, $7,532,200.
[5] Includes $3,283,347.37 "Improvement Account."
[6] The income and expense accounts included in these figures, aside from what this corporation received as rental under lease to the Boston & Maine R.R., are the operating accounts of the Boston, Concord & Montreal R.R., which is operated by this corporation under lease of June, 1884.
[7] Includes $7,000 for "Organization Expenses."
[8] On preferred stock.
[9] Deficit.
[10] Added: increase in valuation of Portland & Rochester R.R. stock to par, $60,459.44.

	8.—Boston & Albany—Con.	9.—Fitchburg—Con.	10.—Boston & Lowell—Con.	11.—Boston & Maine—Con.
MILEAGE, TRAFFIC, ETC.				
Passenger-train mileage,	2,336,543	1,937,513	485,968	5,618,402
Freight-train mileage,	2,585,729	1,883,301	641,961	3,024,807
Total revenue-train mileage,	4,922,272	3,820,814	1,127,929	8,643,209
Switching-train mileage,	824,407	1,061,285	79,207	1,663,742
Other train mileage,	213,871	134,227	50,512	333,232
TOTAL TRAIN MILEAGE,	5,960,550	5,016,326	1,257,648	10,640,183
Number season-ticket passengers,	726,306	353,348	–	2,380,944
Number local passengers (including season),	9,873,027	5,196,701	195,580	25,586,971
Number through passengers,*	1,118,842	395,172	238,217	1,052,550
Total number of passengers carried,	10,991,869	5,591,873	433,797	26,639,521
Local passenger mileage,	132,852,056	64,295,881	2,789,889	278,921,490
Through passenger mileage,*	60,303,264	21,033,726	10,998,341	56,180,693
Total passenger mileage,	193,155,320	85,329,607	13,788,230	335,102,183
Tons of local freight carried,	1,942,846	879,482	148,593	3,284,694
Tons of through freight carried,*	1,786,051	2,331,894	601,814	2,785,136
Total tons of freight carried,	3,728,897	3,211,376	750,407	6,069,830
Local freight mileage,	127,336,511	33,556,677	5,111,406	119,616,975
Through freight mileage,*	277,914,164	269,401,938	42,418,665	171,942,772
Total freight mileage,	405,250,675	302,958,615	47,530,071	291,559,747
Av. rate of fare per mile, local passengers,	1.883 cents.	2.01 cents.	3.59 cents.	2.098 cents.
through passengers,*	2.070 "	2.18 "	2.69 "	1.952 "
season-ticket passengers,	.600 "	.71 "	–	.924 "
ALL PASSENGERS,	1.872 "	1.97 "	2.87 cents.	1.937 "
Av. rate of freight per mile, local freight,	1.750 "	2.96 "	2.11 "	2.872 "
through freight,*	.770 "	.86 "	1.18 "	1.318 "
ALL FREIGHT,	1.080 "	1.09 "	1.28 "	1.955 "

Passengers to Boston (including season),	3,274,760	1,749,272	–	8,734,164
Passengers from Boston (including season),	3,307,439	1,730,909	–	8,690,158
Season-ticket passengers to and from Boston,	577,680	166,904	–	1,436,148
Equipment.				
Number of locomotives,	253	183	37[1]	421
passenger cars,	253	186	26	577
parlor and sleeping cars,	15	–	5	23
mail, baggage, and express cars,	55	46	24	189
freight cars (basis 8 wheels),	6,000	5,381	918	8,301
other cars,	606	28	–	404
General Information, etc.				
Total miles of road operated,	388.58	369.08	187.26	1,208.788
Same in Massachusetts,	331.95	226.90	–	465.558
Average number of persons employed,	5,826	4,607	940	8,919

* To and from other roads.

[1] Leased equipment. Boston & Lowell R.R. equipment included in Boston & Maine R.R. return.

	12.—Boston & Providence. *	13.—New York & New England. †	14.—Old Colony.	15.—Cheshire.
Capital Stock.				
Amount paid in,	$4,000,000 00	$22,200,000 00[1]	$11,766,200 00[2]	$2,153,300 00
Number of stockholders,	1,471	1,454[3]	5,847	465
Stockholders in Massachusetts,	1,177	808[4]	5,483	378
Amount of stock held in Massachusetts,	$3,420,500 00	$5,463,200 00[5]	$11,033,600 00	$1,602,700 00
Debt.				
Funded debt,	$2,005,000 00	$16,684,508 59	$11,166,900 00	$800,000 00
Unfunded debt,	106,025 50	861,874 57	1,503,310 68	108,799 26
Total Gross Debt,	2,111,025 50	17,546,383 16	12,670,210 68	908,799 26
Permanent Investments.				
Construction,	$5,046,088 30	$33,283,680 84	$18,733,686 38	$2,410,863 90
Equipment,	871,234 35	4,029,830 19	2,228,373 30	331,266 32
Other property,	315,093 40	532,782 40	1,789,562 81	–
Total Permanent Investments,	6,232,416 05	37,846,293 43	22,751,622 49	2,742,130 22
Cash and cash assets,	145,648 74	1,358,494 52	1,578,588 14	378,524 02
Total Property and Assets,	6,378,064 79	39,204,787 95	24,330,210 63[6]	3,120,654 24
Revenue for the Year.				
From local passengers,	$511,326 88	$1,293,601 52	3,000,789 53	$51,326 00
through passengers,	75,353 30	462,937 41	530,085 34	123,555 77
express and extra baggage,	33,933 86	144,689 68	188,761 79	7,500 00
mails,	5,979 71	53,523 04	64,111 59	9,500 04
other sources passenger department,	–	–	–	7,500 00
Total earnings passenger department,	626,593 75	1,954,751 65	3,783,748 25	199,381 81
From local freight,	188,120 03	1,126,129 86	1,635,401 50	22,912 56
through freight,	133,970 57	2,011,715 26	781,164 42	364,525 95
other sources freight department,	–	–	–	–
Total earnings freight department,	322,090 60	3,137,845 12	2,416,565 92	387,438 51
Total Transportation Earnings,	948,684 35[7]	5,092,596 77	6,200,314 17	586,820 32

From rents for use of road,	229,929 16[8]	–	3,600 00	–
all other sources,	15,693 80	180,854 24	489,436 02	24,215 69
TOTAL INCOME FROM ALL SOURCES,	1,194,307 31	5,273,451 01	6,693,350 19	611,036 01
EXPENSES.				
Transportation expenses,	$1,307,634 43	$3,520,592 02	$4,443,423 10	$389,511 70
Taxes,	3,380 90	178,657 56	367,172 04	27,761 08
TOTAL EXPENSES,	1,311,015 33	3,699,249 58	4,810,595 14	417,272 78
NET INCOME, DIVIDENDS, ETC.				
Net income,	$116,708 02[9]	$1,574,201 43	$1,882,755 05	$193,763 23
Rents,	6,914 25	404,096 71	265,558 79	51,000 00
Interest accrued,	53,836 93	999,238 07	636,367 58	48,000 00
Dividends earned,	–	170,866 65	980,828 68	94,763 23
Per cent.,	–	–	8.3	4.4
Dividends declared,	400,000 00	139,416 67	802,763 50	126,000 00
Per cent.,	10.0	7.0	7.0	6.0
Balance for the year,	577,459 20[9]	31,449 98[11]	178,065 18	31,236 77[9]
Surplus last year,	844,498 49[10]	573,045 19[9]	998,909 77	89,791 75
Surplus Sept. 30, 1888,	267,039 29	541,595 21[9]	1,176,974 95	58,554 98

* Operated by the Old Colony R.R. Co. from April 1, 1888, and from that date the traffic operations are included in the return of the Old Colony.
† See page for objections of the Board to this return, and the answer of the company.
[1] $20,000,000 common, $2,200,000 preferred.
[2] Liability on outstanding stock of B. C. F. & N. B. R. R. Co. and Lowell & Framingham R. R. Co., $10,325.00 not included.
[3] 1,085 common, 369 preferred.
[4] 510 common, 298 preferred.
[5] $3,588,100 common, $1,875,100 preferred.
[6] Not including $1,293,500.00 "Boston & Providence R. R. Lease Account."
[7] From Oct. 1, 1887, to April 1, 1888.
[8] From April 1, 1888.
[9] Deficit.

[10] Balance at commencement of year, $116,041 42

Add: Bonus received from Old Colony R. R.,	$1,300,000 00	
Premium on bonds sold,	10,000 00	
Re-valuation of equipment,	738,876 49	
	$2,048,876 49	
Deduct: Bonus paid stockholders, $1,300,000 00		
Worthless accounts, 20,419 42	1,320,419 42	
		728,457 07
		$844,498 49

[11] Balance at commencement of year (deficit), $512,002 18

Add: Worthless accounts,	$2,811 52	
Expenditures during the fiscal year, rentals, renewals of roadway, equipment, etc., pertaining to the business of former years,	83,191 29	
Discrepancy in accounts of Norwich & Worcester lease, caused by settlements in prior years,	18,944 37	
		104,947 18
		$616,949 36
Deduct: Premium on sale preferred stock,	$33,290 42	
" " " 2d mortgage bonds,	4,353 75	
Credit balances transferred,	6,260 00	
		43,904 17
Balance at commencement of year, as so changed (deficit),		$573,045 19

	12.—Boston & Providence—Con.	13.—New York & New England—Con.	14.—Old Colony—Con.	15.—Cheshire—Con.
MILEAGE, TRAFFIC, ETC.				
Passenger-train mileage,	409,030	1,712,858	2,589,957	165,653
Freight-train mileage,	119,452	1,498,991	967,608	344,608
Total revenue-train mileage,	528,482	3,211,849	3,557,565	510,261
Switching-train mileage,	29,095	850,369	902,370	66,629
Other train mileage,	–	175,338	221,169	24,043
TOTAL TRAIN MILEAGE,	557,577	4,237,556	4,681,104	600,933
Number season-ticket passengers,	295,800	996,449	2,638,662	7,550
Number local passengers (including season),	3,286,177	6,158,868	13,733,577	107,956
Number through passengers,*	114,900	693,511	955,920	97,125
Total number of passengers carried,	3,401,077	6,852,379	14,689,497	205,081
Local passenger mileage,	27,800,153	63,864,714	164,556,992	1,890,433
Through passenger mileage,*	3,500,113	19,454,489	26,359,601	4,063,968
Total passenger mileage,	31,300,266	83,319,203	190,916,593	5,954,401
Tons of local freight carried,	207,021	888,830	1,583,343	23,038
Tons of through freight carried,*	181,433	1,663,502	826,993	578,683
Total tons of freight carried,	388,454	2,552,332	2,410,336	601,721
Local freight mileage,	5,308,018	36,414,042	46,038,647	516,820
Through freight mileage,*	5,745,982	164,325,005	35,451,688	31,171,078
Total freight mileage,	11,054,000	200,739,047	81,490,335	31,687,898
Av. rate of fare per mile, local passengers,	1.956 cents.	2.175 cents.	2.25 cents.	3.50 cents.
through passengers,*	2.153 "	2.379 "	2.011 "	3.40 "
season-ticket passengers,	.913 "	.831 "	.710 "	1.20 "
ALL PASSENGERS,	1.874 "	2.018 "	1.849 "	2.90 "
Av. rate of freight per mile, local freight,	3.354 "	3.090 "	4.100 "	5.00 "
through freight,*	2.331 "	1.224 "	2.200 "	1.70 "
ALL FREIGHT,	2.914 "	1.560 "	2.900 "	1.22 "

Passengers to Boston (including season),	1,224,360	1,350,799	3,286,572	–
Passengers from Boston (including season),	1,286,258	1,332,777	3,114,679	–
Season-ticket passengers to and from Boston,	209,278	300,752	1,625,373	–
Equipment.				
Number of locomotives,	–	167	212[1]	30
passenger cars,	–	185	469[1]	26
parlor and sleeping cars,	–	3	36[1]	–
mail, baggage, and express cars,	–	23	64[1]	11
freight cars (basis 8 wheels),	–	4,293	3,184	463
other cars,	–	12	48	32
General Information.				
Total miles of road operated,	67.752	465.50	563.550	64.01
Same in Massachusetts,	57.331	148.16	541.502	21.20
Average number of persons employed,	1,011	4,129	4,362	373

* To and from other roads.

[1] In 2 of these locomotives, 30 passenger cars, and 14 baggage cars, the leased interest averages about 29 per cent.; in 24 parlor cars, 8 per cent.

	16. — Connecticut River.	17. — Fall River, Warren & Providence. 1	18. — Grafton & Upton.
Capital Stock.			
Amount paid in,	$2,580,000 00	$150,000 00	$100,000 00
Number of stockholders,	976	27	13
Stockholders in Massachusetts,	774	11	13
Amount of stock held in Massachusetts,	$2,021,800 00	$103,300 00	$100,000 00
Debt.			
Funded debt,	–	$300,000 00	$100,000 00
Unfunded debt,	$882,239 41	6,352 80	–
Total Gross Debt,	882,239 41	306,352 80	100,000 00
Permanent Investments.			
Construction,	$2,968,908 89	$310,747 60	$173,594 51
Equipment,	436,681 14	–	25,025 69
Other property,	309,610 00	–	–
Total Permanent Investments,	3,715,200 03	310,747 60	198,620 20
Cash and cash assets,	734,997 80	1,859 52	3,948 86
Total Property and Assets,	4,450,197 83	312,607 12	202,569 06
Revenue for the Year.			
From local passengers,	$308,339 98	$529 55	$5,884 05
through passengers,	132,139 29	26,954 15	–
express and extra baggage,	18,500 00	1,500 00	518 10
mails,	12,605 87	445 48	400 00
other sources passenger department,	–	–	–
Total earnings passenger department,	471,585 14	29,429 18	6,802 15

From local freight,	123,741 40	11 64	3,050 83
through freight,	391,910 65	7,145 01	–
other sources freight department,	–	–	–
Total earnings freight department,	515,652 05	7,156 65	3,050 83
TOTAL TRANSPORTATION EARNINGS,	987,237 19	36,585 83	9,852 98
From rents for use of road,	–	–	–
all other sources,	48,432 06	60 00	–
TOTAL INCOME FROM ALL SOURCES,	1,035,669 25	36,645 83	9,852 98
EXPENSES.			
Transportation expenses,	$724,779 40[2]	$41,127 09	$5,458 59
Taxes,	65,438 02	300 98	367 00
TOTAL EXPENSES,	790,217 42	41,428 07	5,825 59
NET INCOME, DIVIDENDS, ETC.			
Net income,	$245,451 83	$4,782 24[3]	$4,027 39
Rents,	24,234 97	–	–
Interest accrued,	23,216 86	–	2,500 00
Dividends earned,	198,000 00	–	1,527 39
Per cent.,	8.0	–	1.5
Dividends declared,	198,000 00	–	–
Per cent.,	8.0	–	–
Balance for the year,	–	4,782 24[3]	1,527 39
Surplus last year,	987,958 42	138,963 44[3]	1,041 67
Surplus Sept. 30, 1888,	987,958 42	143,745 68[3]	2,569 06

[1] Road in possession of trustees for the bondholders.

[2] Includes $56,844.40 transferred from equipment account, $76,400.52 from construction account, and $7,917.12 on account of loss and damage from fire at Chicopee.

[3] Deficit.

	16. — Connecticut River — Con.	17. — Fall River, Warren & Providence — Con.	18. — Grafton & Upton — Con.
MILEAGE, TRAFFIC, ETC.			
Passenger-train mileage,	354,412	31,900	16,902
Freight-train mileage,	150,473	6,580	6,100
Total revenue train mileage,	504,885	38,480	23,002
Switching-train mileage,	145,791	–	–
Other train mileage,	22,009	–	–
TOTAL TRAIN MILEAGE,	672,685	38,480	23,002
Number season-ticket passengers,	399,279	19,054	–
Number local passengers (including season),	1,557,209	5,058	57,194
Number through passengers,*	193,163	173,337[1]	–
Total number of passengers carried,	1,750,372	178,395	57,194
Local passenger mileage,	13,229,217	17,241	171,582
Through passenger mileage,*	4,922,501	996,358	–
Total passenger mileage,	18,151,718	1,013,599	171,582
Tons of local freight carried,	176,040	18	5,053
Tons of through freight carried,*	622,969	13,733	–
Total tons of freight carried,	799,009	13,751	5,053
Local freight mileage,	2,929,783	72	15,159
Through freight mileage,*	16,536,641	105,864	–
Total freight mileage,	19,466,424	105,936	15,159
Average rate of fare per mile, local passengers,	2.33 cents.	3.07 cents.	–
through passengers,*	2.68 "	2.70 "	–
season-ticket passengers,	.96 "	.72 "	–
ALL PASSENGERS,	2.42 "	2.71 "	–
Average rate of freight per mile, local freight,	4.22 "	10.30 "	–
through freight,*	2.37 "	6.70 "	–
ALL FREIGHT,	2.65 "	6.70 "	–

Equipment.			
Number of locomotives,	43[2]	–[3]	2
passenger cars,	39	–	1
parlor and sleeping cars,	–	–	–
mail, baggage, and express cars,	20[4]	–	–
freight cars (basis 8 wheels),	551	–	1
other cars,	47	–	3
General Information, etc.			
Total miles of road operated,	79.85	5.794	3.00
Same in Massachusetts,	55.93	3.662	3.00
Average number of persons employed,	592	16	8

* To and from other roads.

[1] Includes season-ticket passengers.

[2] Includes 10 leased under contract of sale to the Vermont Valley R.R. Company of 1871.

[3] Equipment furnished by Old Colony R.R. Company.

[4] Includes 16 combination cars.

	19.—Housatonic of Connecticut. 1	20.—Monadnock (Lessees).	21.—New London Northern. 2
Capital Stock.			
Amount paid in,	–	–	$1,500,000 00
Number of stockholders,	–	–	336
Stockholders in Massachusetts,	–	–	56
Amount of stock held in Massachusetts,	–	–	$327,000 00
Debt.			
Funded debt,	–	–	$1,499,500 00
Unfunded debt,	–	–	137,274 59
Total Gross Debt,	–	–	1,636,774 59
Permanent Investments.			
Construction,	–	–	$2,820,799 28
Equipment,	–	–	248,420 44
Other property,	–	–	243,170 00
Total Permanent Investments,	–	–	3,312,389 72
Cash and cash assets,	–	–	274,774 50
Total Property and Assets,	–	–	3,587,164 22
Revenue for the Year.			
From local passengers,	$85,002 01	$4,826 27	$130,249 50[3]
through passengers,	34,000 81	7,103 40	82,341 22
express and extra baggage,	7,335 26	1,000 00	10,298 79
mails,	4,653 49	708 84	11,030 00
other sources passenger department,	–	–	–
Total earnings passenger department,	130,991 57	13,638 51	233,919 51

From local freight,	66,022 93	7,608 43	141,794 48
through freight,	88,030 58	11,676 54	237,544 51
other sources freight department,	19,511 49	–	–
Total earnings freight department,	173,565 00	19,284 97	379,338 99
TOTAL TRANSPORTATION EARNINGS,	304,556 57	32,923 48	613,258 50
From rents for use of road,	–	–	–
all other sources,	10,792 93	700 56	13,133 07
TOTAL INCOME FROM ALL SOURCES,	315,349 50	33,624 04	626,391 57
EXPENSES.			
Transportation expenses,	$191,627 88	$26,249 58	$414,336 55
Taxes,	12,180 00	1,529 30	17,997 32
TOTAL EXPENSES,	203,807 88	27,778 88	432,333 87
NET INCOME, DIVIDENDS, ETC.			
Net income,	–	$5,845 16	$232,365 02[4]
Rents,	–	–	–
Interest accrued,	–	–	86,383 83
Dividends earned,	–	–	–
Per cent.,	–	–	–
Dividends declared,	–	–	105,000 00
Per cent.,	–	–	7.0
Balance for the year,	–	–	40,981 19
Surplus last year,	–	–	409,408 44[4]
Surplus Sept. 30, 1888,	–	–	450,389 63

[1] Operating the Berkshire, Stockbridge & Pittsfield and West Stockbridge railroads.

[2] Leased to J. Gregory Smith, *et al.*

[3] Lessees' account.

[4] Company's account, being amount derived from rent, etc., $240,858.97; less general expenses, $6,761.09; repairs to wharf, $1,732.86; total expenses, $8,493.95.

	19. — Housatonic of Connecticut — Con.	20. — Monadnock (Lessees) — Con.	21. — New London Northern — Con.
MILEAGE, TRAFFIC, ETC.			
Passenger-train mileage,	137,115	17,987	266,080
Freight-train mileage,	152,725	8,993	206,924
Total revenue train mileage,	289,840	26,980	473,004
Switching-train mileage,	21,264	–	124,414
Other train mileage,	19,516	–	1,105
TOTAL TRAIN MILEAGE,	330,620	26,980	598,523
Number season-ticket passengers,	–	–	27,787
Number local passengers (including season),	197,510	16,423	381,994
Number through passengers,*	98,755	13,428	153,130
Total number of passengers carried,	296,265	29,851	535,124
Local passenger mileage,	3,197,482	164,632	4,602,529
Through passenger mileage,*	1,598,741	161,328	3,269,417
Total passenger mileage,	4,796,223	325,960	7,871,946
Tons of local freight carried,	62,553	6,391	146,055
Tons of through freight carried,*	83,404	28,630	389,086
Total tons of freight carried,	145,957	35,021	535,141
Local freight mileage,	1,423,958	77,324	4,927,488
Through freight mileage,*	5,695,832	431,885	24,107,044
Total freight mileage,	7,119,790	509,209	29,034,532
Average rate of fare per mile, local passengers,	2.66 cents.	4.00 cents.	3.10 cents.
through passengers,*	2.19 "	4.40 "	2.52 "
season-ticket passengers,	–	–	.72 "
ALL PASSENGERS,	2.48 "	3.66 "	2.70 "
Average rate of freight per mile, local freight,	4.64 "	8.00 "	3.50 "
through freight,*	1.54 "	2.72 "	.98 "
ALL FREIGHT,	2,44 "	3.78 "	1.31 "

Equipment.			
Number of locomotives,	–	–	26
passenger cars,	–	–	17
parlor and sleeping cars,	–	–	–
mail, baggage, and express cars,	–	–	13
freight cars (basis 8 wheels),	–	–	325
other cars,	–		7
General Information, etc.			
Total miles of road operated,	46.60	15.800	100.00
Same in Massachusetts,	46.60	2.038	54.00
Average number of persons employed,	190	25	546

* To and from other roads.

	22.—New York, New Haven & Hartford.	23.—Providence & Worcester.	24.—Union Freight.
Capital Stock.			
Amount paid in,	$15,500,000 00	$3,000,000 00	$300,000 00
Number of stockholders,	3,564	818	3
Stockholders in Massachusetts,	491	442	3
Amount of stock held in Massachusetts,	$2,194,700 00	$1,702,600 00	$300,000 00
Debt.			
Funded debt,	$2,000,000 00	$1,242,000 00	–
Unfunded debt,	1,965,740 99	80,762 98	$115,885 38
Total Gross Debt,	3,965,740 99	1,322,762 98	115,885 38
Permanent Investments.			
Construction,	$15,522,697 75	$3,500,000 00	$401,069 67
Equipment,	3,061,316 02	575,000 00	17,000 00
Other property,	999,714 59	–	13,000 00
Total Permanent Investments,	19,583,728 36	4,075,000 00	431,069 67
Cash and cash assets,	3,436,954 77	674,442 88	16,221 53
Total Property and Assets,	23,020,683 13	4,749,442 88	447,291 20
Revenue for the Year.			
From local passengers,	$3,366,333 69	$465,957 85	–
through passengers,	1,555,110 68	73,278 59	–
express and extra baggage,	322,502 52	20,907 07	–
mails,	195,596 35	3,549 09	–
other sources, passenger department,	208,641 34	–	–
Total earnings, passenger department,	5,648,184 58	563,692 60	–
From local freight,	1,570,164 05	408,949 02	$74,469 25

through freight,	2,462,447 76	362,251 97	985 90
other sources, freight department,	85,758 61	–	–
Total earnings, freight department,	4,118,370 42	771,200 99	75,455 15
TOTAL TRANSPORTATION EARNINGS,	9,766,555 00	1,334,893 59	75,455 15
From rents for use of road,	–	–	–
all other sources,	203,481 31	62,707 56	912 00
TOTAL INCOME FROM ALL SOURCES,	9,970,036 31	1,397,601 15	76,367 15
EXPENSES.			
Transportation expenses,	$6,822,528 17	$933,730 43	$45,194 23
Taxes,	494,254 12	61,250 50	2,337 99
TOTAL EXPENSES,	7,316,782 29	994,980 93	47,532 22
NET INCOME, DIVIDENDS, ETC.			
Net income,	$2,653,254 02	$402,620 22	$28,834 93
Rents,	939,534 82	–	–
Interest accrued,	80,000 00	74,520 00	7,582 41
Dividends earned,	1,633,719 20	328,100 22	21,252 52
Per cent.,	10.5	10.9	7.2
Dividends declared,	1,550,000 00	300,000 00	21,000 00
Per cent.,	10.0	10.0	7.0
Balance for the year,	83,719 20	28,100 22	252 52
Surplus last year,	3,471,222 94[1]	196,619 48	31,153 30
Surplus Sept. 30, 1888,	3,554,942 14	426,679 90[2]	31,405 82

[1] Less accounts charged off, $76,585.46.

[2] Including "Improvement Account," $201,960.20.

	22.—New York, New Haven & Hartford—Con.	23.—Providence & Worcester—Con.	24.—Union Freight—Con.
MILEAGE, TRAFFIC, ETC.			
Passenger-train mileage,	3,500,258	369,943	–
Freight-train mileage,	1,860,745	214,705	19,901
Total revenue train mileage,	5,361,003	584,648	19,901
Switching-train mileage,	792,230	275,145	–
Other train mileage,	476,108	24,856	–
TOTAL TRAIN MILEAGE,	6,629,341	884,649	19,901
Number season-ticket passengers,	3,085,486	122,148	–
Number local passengers (including season),	10,866,558	2,926,501	–
Number through passengers,*	969,254	172,494	–
Total number of passengers carried,	11,835,812	3,098,995	–
Local passenger mileage,	216,376,036	22,434,913	–
Through passenger mileage,*	75,622,036	3,054,686	–
Total passenger mileage,	291,998,072	25,489,599	–
Tons of local freight carried,	1,368,685	508,228	260,544
Tons of through freight carried,*	1,800,846	585,631	3,963
Total tons of freight carried,	3,169,531	1,193,859	264,507
Local freight mileage,	54,375,470	13,521,064	358,248
Through freight mileage,*	171,892,162	17,140,023	5,944
Total freight mileage,	226,267,632	30,661,087	364,192
Average rate of fare per mile, local passengers,	2.00 cents.	2.19 cents.	–
through passengers,*	2.00 "	2.39 "	–
season-ticket passengers,	.46 "	.71 "	–
ALL PASSENGERS,	1.68 "	2.12 "	–
Average rate of freight per mile, local freight,	2.89 "	3.02 "	2.08 cents.
through freight,*	1.43 "	2.11 "	1.66 "
ALL FREIGHT,	1.78 "	2.52 "	2.07 "

EQUIPMENT.			
Number of locomotives,	199	38	4
passenger cars,	408	52	—
parlor and sleeping cars,	53	—	—
mail, baggage, and express cars,	121	14	—
freight cars (basis 8 wheels),	4,157	1,199	—
other cars,	102	15	—
GENERAL INFORMATION, ETC.			
Total miles of road operated,	508.08	50.41	2.431
Same in Massachusetts,	77.23	26.01	2.431
Average number of persons employed,	7,242	911	43

* To and from other roads.

NARROW-GAUGE ROADS.	25.—Boston, Revere Beach & Lynn.	26.—Boston, Winthrop & Shore.	27.—Hoosac Tunnel & Wilmington.
Capital Stock.			
Amount paid in,	$600,000 00	$289,600 00	$50,000 00
Number of stockholders,	343	50	6
Stockholders in Massachusetts,	316	50	5
Amount of stock held in Massachusetts,	$537,600 00	$289,600 00	$49,700 00
Debt.			
Funded debt,	$350,000 00	$246,000 00	–
Unfunded debt,	189,395 72	65,624 00	$56,465 52
Total Gross Debt,	539,395 72	311,624 00	56,465 52
Permanent Investments.			
Construction,	$688,336 41	$488,530 36	$103,405 37
Equipment,	233,014 77	13,500 00	–
Other property,	225,940 97	94,100 00	–
Total Permanent Investments,	1,147,292 15	596,130 36	103,405 37
Cash and cash assets,	96,047 84	6,426 20	–
Total Property and Assets,	1,243,339 99	602,556 56	103,405 37
Revenue for the Year.			
From local passengers,	$231,980 13	$25,757 05	$2,718 15
through passengers,	–	2,823 90	–
express and extra baggage,	–	–	196 15
mails,	–	–	483 08
all other sources,	19,553 66	168 00	12,276 21
Total Income from all Sources,	251,533 79	28,748 95	15,673 59

Expenses.			
Transportation expenses,	$147,149 18	$20,259 53	$15,171 05
Taxes,	12,917 14	290 10	81 11
Total Expenses,	160,066 32	20,549 63	15,252 16
Net Income, Dividends, etc.,			
Net income,	$91,467 47	$8,199 32	$421 43
Rents,	–	–	–
Interest accrued,	26,338 90	11,421 25	2,356 58
Dividends earned,	65,128 57	–	–
Per cent.,	10.5	–	–
Dividends declared,	42,000 00	–	–
Per cent.,	7.0	–	–
Balance for the year,	23,128 57	3,221 93 [1]	1,935 15 [1]
Surplus last year,	80,815 70	4,554 49	1,125 00 [1]
Surplus Sept. 30, 1888,	103,944 27	1,332 56	3,060 15 [1]

[1] Deficit.

NARROW-GAUGE ROADS.	25. — BOSTON, REVERE BEACH & LYNN — Con.	26. — BOSTON, WINTHROP & SHORE — Con.	27. — HOOSAC TUNNEL & WILMINGTON — Con.
MILEAGE, TRAFFIC, ETC.			
Passenger-train mileage,	181,525	64,725	14,085
Other train mileage,	3,065	3,741	–
TOTAL TRAIN MILEAGE,	184,590	68,466	14,085
Number season-ticket passengers,	433,672	–	–
Number local passengers (including season),	2,217,306	430,805	7,300
Number through passengers (to and from other roads),	28,239	28,239	–
Total number of passengers carried,	2,245,545	459,044	7,300
Local passenger mileage,	11,663,083	87,742	62,003
Through passenger mileage (to and from other roads),	87,742	1,104,772	–
Total passenger mileage,	11,750,825	1,192,514	62,003
EQUIPMENT.			
Number of locomotives,	8	3	2
passenger cars,	45	5	4
mail, baggage, and express cars,	–	–	–
freight cars (basis 8 wheels),	3	–	29
other cars,	15	–	–
GENERAL INFORMATION, ETC.			
Total miles of road operated,	8.80	10.40	11.00
Same in Massachusetts,	8.80	10.40	8.00
Average number of persons employed,	132	17	16

NARROW-GAUGE ROADS.	28. — MARTHA'S VINEYARD.	29. — NANTUCKET.	30. — WORCESTER & SHREWSBURY.
CAPITAL STOCK.			
Amount paid in,	$40,000 00	$84,000 00	$36,825 00
Number of stockholders,	26	44	10
Stockholders in Massachusetts,	24	38	10
Amount of stock held in Massachusetts,	$33,700 00	$73,300 00	$36,825 00
DEBT.			
Funded debt,	$40,000 00	$17,000 00	$22,000 00
Unfunded debt,	4,032 00	–	15,239 64
TOTAL GROSS DEBT,	44,032 00	17,000 00	37,239 64
PERMANENT INVESTMENTS.			
Construction,	$91,512 09	$87,068 42	$57,658 82
Equipment,	14,086 00	14,413 18	42,801 48
Other property,	3,501 63	–	–
TOTAL PERMANENT INVESTMENTS,	109,099 72	101,481 60	100,460 30
Cash and cash assets,	2,031 73	2,550 00	27 25
TOTAL PROPERTY AND ASSETS,	111,131 45	104,031 60	100,487 55
REVENUE FOR THE YEAR.			
From local passengers,	$4,605 25	$6,348 65	$25,110 15
through passengers,	–	–	–
express and extra baggage,	–	–	–
mails,	175 00	160 41	–
all other sources,	351 50	554 91	173 67
TOTAL INCOME FROM ALL SOURCES,	5,131 75	7,063 97	25,283 82

NARROW-GAUGE ROADS.	28. — MARTHA'S VINEYARD — Con.	29. — NANTUCKET — Con.	30. — WORCESTER & SHREWSBURY — Con.
EXPENSES.			
Transportation expenses,	$3,913 17	$3,517 58	$21,276 58
Taxes,	24 07	20 79	460 07
TOTAL EXPENSES,	3,937 24	3,538 37	21,736 65
NET INCOME, DIVIDENDS, ETC.			
Net income,	$1,194 51	$3,525 60	$3,547 17
Rents,	–	–	–
Interest accrued,	2,000 00	494 00	1,770 50
Dividends earned,	–	–	1,776 67
Per cent.,	–	–	–
Dividends declared,	–	–	–
Per cent.,	–	–	–
Balance for the year,	805 49[1]	3,031 60	1,776 67
Surplus last year,	27,904 94	–	24,646 24
Surplus Sept. 30, 1888,	27,099 45	3,031 60	26,422 91
MILEAGE, TRAFFIC, ETC.			
Passenger-train mileage,	5,911	11,176	34,383
Other train mileage,	–	–	–
TOTAL TRAIN MILEAGE,	5,911	11,176	34,383
Number season-ticket passengers,	–	–	–
Number local passengers (including season),	19,203	20,638	347,580
Nuber through passengers,*	–	–	–
Total number of passengers carried,	19,203	20,638	347,580
Local passenger mileage,	134,421	227,018	1,042,740
Through passenger mileage,*	–	–	–
Total passenger mileage,	134,421	227,018	1,042,740

Equipment.			
Number of locomotives,	1	2	4
passenger cars,	3	4	8
mail, baggage, and express cars,	1	–	–
freight cars (basis 8 wheels),	–	3	–
other cars,	–	–	4
General Information, etc.			
Total miles of road operated,	8.78	11.16	2.70
Same in Massachusetts,	8.78	11.16	2.70
Average number of persons employed,	10	15	9

* To and from other roads.

[1] Deficit.

LEASED ROADS.*	31. — ATTLEBOROUGH BRANCH. 1	32. — BERKSHIRE. 2	33. — CHATHAM. 1	34. — CENTRAL MASSACHUSETTS. 3	35. — EASTERN. 3
LIABILITIES.					
Capital stock,	$131,700 00	$600,000 00	$68,200 00	$7,373,254 00†	$8,147,200 00‡
Funded debt,	–	–	30,000 00	2,000,000 00	10,074,213 81
Unfunded debt,	–	245 07	–	–	788,485 97
Surplus Sept. 30, 188 ,	783 01	14,241 85	776 51	–	1,019,547 48§
TOTAL LIABILITIES,	132,483 01	614,486 92	98,976 51	9,373,254 00	20,029,447 26
ASSETS.					
Construction,	$131,416 48	$600,000 00	$96,025 46	$9,373,254 00	$14,497,655 26
Other property,	1,000 00	6,000 00	600 50	–	4,504,795 73
Cash and cash assets,	66 53	8,486 92	2,350 55	–	1,026,996 27
TOTAL ASSETS,	132,483 01	614,486 92	98,976 51	9,373,254 00	20,029,447 26
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources,	$9,309 00	$42,432 90	$2,043 88	$101,500 00	$875,427 52
Total expenses,	88 20	10,857 00	367 37	1,500 00	14,367 91
Net income,	9,220 80	31,575 90	1,676 51	100,000 00	861,059 61
Interest accrued,	–	–	900 00	100,000 00	743,041 02‖
Dividends declared,	9,219 00	31,608 60	–	–	440,820 00
Per cent.,	7.0	5.27	–	–	**–
Balance for the year,	1 80	32 70*d*	776 51	–	322,801 41*d*

* Leased to and operated by the [1] Old Colony, [2] Housatonic of Connecticut, [3] Boston & Maine.

† Common, $3,922,754; preferred, $3,450,500.

‡ Common, $4,997,600; preferred, $3.149,600.

d Deficit.

§ Includes $722,333.53 fund for redemption of mortgage debt.

‖ Includes $100,000 paid trustees of sinking fund.

** Six per cent. on preferred stock, $188,973; 4½ per cent on common stock, $224,892; 4½ per cent. on Portsmouth, Great Falls & Conway R.R. Co. stock, $26,955.

LEASED ROADS.*	36. — FALL RIVER. 1	37. — HOLYOKE & WESTFIELD. 2	38. — LOWELL & ANDOVER. 3	39. — MILFORD & WOONSOCKET. 4	40. — MILFORD, FRANKLIN & PROVIDENCE. 4
LIABILITIES.					
Capital stock,	$200,000 00	$260,000 00	$500,000 00	$148,600 00	$100,000 00
Funded debt,	200,000 00	260,000 00	178,000 00	19,000 00	–
Unfunded debt,	60,096 24	–	–	51,346 92	1,343 50
Surplus Sept. 30, 188 ,	16,256 17*d*	11,045 36	120,522 45	24,883 53*d*	–
TOTAL LIABILITIES,	460,096 24	531,045 36	798,522 45	218,946 92	101,343 50
ASSETS.					
Construction,	$443,832 29	$522,268 89	$767,075 24	$171,431 13	$95,304 77
Other property,	–	–	–	–	5,962 87
Cash and cash assets,	7 78	8,776 47	31,447 21	22,632 26	75 86
TOTAL ASSETS,	443,840 07	531,045 36	798,522 45	194,063 39	101,343 50
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources,	$13,027 60	$27,289 05	$53,571 37	–†	–†
Total expenses,	398 20	2,156 36	5,147 55	$574 91	–
Net income,	12,629 40	25,132 69	48,423 82	574 91*d*	–
Interest accrued,	10,000 00	17,600 00	10,680 00	3,211 43	–
Dividends declared,	–	6,500 00	35,000 00	–	–
Per cent.,	–	2.5	7.0	–	–
Balance for the year,	2,629 40	1,032 69	2,743 82	3,786 34*d*	–

* Leased to and operated by the [1] Old Colony; [2] New York, New Haven & Hartford; [3] Boston & Maine; [4] New York & New England.

† No income received from lessee.

d Deficit.

LEASED ROADS.*	41.—MONADNOCK. 1	42.—NANTASKET BEACH (TRUSTEE). 2	43.—NASHUA & LOWELL. 3	44.—NASHUA & ACTON & BOSTON. 4	45.—NEWBURYPORT CITY. 3
LIABILITIES.					
Capital stock,	$205,400 00	–	$800,000 00	$500,000 00	$97,000 00
Funded debt,	48,000 00	$250,000 00	300,000 00	500,000 00	25,000 00
Unfunded debt,	–	–	38,620 50	522,482 90	–
Surplus Sept. 30, 1888,	123,203 07	–	119,368 46	459,194 29*d*	18,401 71
TOTAL LIABILITIES,	376,603 07	250,000 00	1,257,988 96	1,522,482 90	140,401 71
ASSETS.					
Construction,	$367,701 26	$250,000 00	$691,292 07	$1,057,031 20	$122,128 33
Other property,	3,090 00	–	218,242 95	–	–
Cash and cash assets,	5,811 81	–	348,453 94	6,257 41	18,273 38
TOTAL ASSETS,	376,603 07	250,000 00	1,257,988 96	1,063,288 61	140,401 71
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources,	$12,000 00	$4,687 50†	$91,533 29	–	$6,906 99
Total expenses,	59 50	–	2,326 45	–	1,080 74
Net income,	11,940 50	4,687 50	89,206 84	–	5,826 25
Interest accrued,	2,356 67	4,687 50	17,112 75	$30,000 00	1,750 00
Dividends declared,	10,000 00	–	72,000 00	–	3,152 50
Per cent.,	5.0	–	9.0	–	3.25
Balance for the year,	416 17*d*	–	94 09	30,000 00*d*	923 75

* Leased to and operated by [1] Cheshire, [2] Old Colony, [3] Boston & Maine, [4] Concord of N. H.

† Operated for 9 months of the year. Rental received is for that period.

d Deficit.

LEASED ROADS.*	46.—NEW HAVEN & NORTHAMPTON. 1	47.—NORTH BROOKFIELD. 2	48.—NORWICH & WORCESTER. 3	49.—PITTSFIELD & NORTH ADAMS. 2	50.—RHODE ISLAND & MASSACHUSETTS. 3
LIABILITIES.					
Capital stock,	$2,460,000 00	$100,000 00	$2,604,400 00	$450,000 00	$100,000 00
Funded debt,	3,900,000 00	–	400,000 00	–	–
Unfunded debt,	–	–	424,727 35	–	19 00
Surplus Sept. 30, 1888,	384,697 01	5,855 04	757,394 46	–	15,018 63
TOTAL LIABILITIES,	6,744,697 01	105,855 04	4,186,521 81	450,000 00	115,037 63
ASSETS.					
Construction,	$5,650,038 40	$105,456,79	$3,569,277 95	$438,752 57	$112,321 13
Other property,	952,154 34	75 00	452,857 75	11,247 43	–
Cash and cash assets,	142,504 27	323 25	164,386 11	–	2,716 50
TOTAL ASSETS,	6,744,697 01	105,855 04	4,186,521 81	450,000 00	115,037 63
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources,	$337,252 62	$3,140 12	$327,450 02	$22,500 00	$10,000 00
Total expenses,	27,674 53	216 17	57,476 02	–	72 00
Net income,	309,578 09	2,923 95	269,974 00	22,500 00	9,928 00
Interest accrued,	269,973 82†	–	62,150 00‡	–	–
Dividends declared,	24.600 00	3,000 00	207,824 00	22,500 00	10,000 00
Per cent.,	1.0	3.0	8.0	5.0	10.0
Balance for the year,	15,004 27	76 05*d*	–	–	72 00*d*

* Leased to and operated by [1] New York, New Haven & Hartford; [2] Boston & Albany; [3] New York & New England.
† Includes $26,848.82 rental paid Holyoke & Westfield R.R. Company.
‡ Includes $38,150 paid New London Northern R.R. Company for use of road.
d Deficit.

LEASED ROADS.*	51. — PROVIDENCE, WEBSTER & SPRINGFIELD. 1	52. — SPENCER. 1	53. — STOCKBRIDGE & PITTSFIELD. 2	54. — STONY BROOK. 3	55. — VERMONT & MASSACHUSETTS. 4
LIABILITIES.					
Capital stock,	$160,000 00	$50,000 00	$448,700 00	$300,000 00	$3,193,000 00
Funded debt,	–	4,500 00	–	–	1,000,000 00
Unfunded debt,	58,961 17	–	821 05	–	12,002 55
Surplus Sept. 30, 1888,	4,749 15	8,634 26	2.863 53	449 87	142,002 28
TOTAL LIABILITIES,	223,710 32	63,134 26	452,384 58	300,449 87	4,347,004 83
ASSETS.					
Construction,	$218,588 37	$62,854 43	$448,700 00	$276,601 19	$3,288,328 01
Other property,	5,121 95	–	2,550 00	21,492 38	472,507 65
Cash and cash assets,	–	279 83	1,134 58	2,356 30	586,169 17
TOTAL ASSETS,	223,710 32	63,134 26	452,384 58	300,449 87	4,347,004 83
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources,	$4,979 37	$3,646 29	$31,647 00	$20,000 00	$194,580 00
Total expenses,	542 30	893 63	7,650 41	260 95	3,000 00
Net income,	4,437 07	2,752 66	23,996 59	19,739 05	191,580 00
Interest accrued,	3,274 86	228 75	70 14	–	–†
Dividends declared,	–	2,250 00	23,905 70	19,500 00	191,580 00
Per cent.,	–	4.5	5.32	6.5	6.0
Balance for the year,	1,162 21	273 91	20 75	239 05	–

* These roads are leased to and operated by the [1] Boston & Albany, [2] Housatonic of Connecticut, [3] Boston & Maine, [4] Fitchburg.
† Interest paid by Fitchburg R.R. Company.

LEASED ROADS.*	56. — WARE RIVER. 1	57. — WEST AMESBURY BRANCH. 2	58. — WEST STOCKBRIDGE. 3	59. — WORCESTER, NASHUA & ROCHESTER. 2
LIABILITIES.				
Capital stock,	$750,000 00	$57,000 00	$39,600 00	$3,099,800 00
Funded debt,	–	57,000 00	–	1,457,000 00
Unfunded debt,	365,163 82	49 00	–	313,041 64
Surplus Sept. 30, 1888,	–	297 69	793 33	192,050 68*d*
TOTAL LIABILITIES,	1,115,163 82	114,346 69	40,393 33	4,869,841 64
ASSETS.				
Construction,	$1,115,163 82	$114,000 00	$39,600 00	$4,138,584 99
Other property,	–	–	–	415,336 03
Cash and cash assets,	–	346 69	793 33	123,869 94
TOTAL ASSETS,	1,115,163 82	114,346 69	40,393 33	4,677,790 96
INCOME, EXPENSES, ETC., FOR THE YEAR.				
Total income from all sources,	$52,500 00	$5,700 00	$2,911 34	$250,000 00
Total expenses,	–	777 36	444 69	2,032 73
Net income,	52,500 00	4,922 64	2,466 65	247,967 27
Interest accrued,	–	3,990 00	–	85,169 23
Dividends declared,	52,500 00	855 00	2,503 53	183,834 00
Per cent.,	7.0	1.5	6.4	6.0
Balance for the year,	–	77 64	36 88*d*	21,035 96*d*

* These roads are leased to and operated by the [1] Boston & Albany, [2] Boston & Maine, [3] Housatonic of Connecticut. *d* Deficit.

	60.—Chelsea Beach. 1*	61.—Danvers. 2*	62.—Horn Pond Branch.†
Liabilities.			
Capital stock,	$38,300 00	$67,500 00	$2,000 00
Funded debt,	–	150,000 00	–
Unfunded debt,	–	26,956 02	–
Surplus Sept. 30, 1888,	10 52	–	13,238 46
Total Liabilities,	38,310 52	244,456 02	15,238 46
Assets.			
Construction,	$38,310 52	$244,456 02	$15,238 46
Other property,	–	–	–
Cash and cash assets,	–	–	–
Total Assets,	38,310 52	244,456 02	15,238 46

* These roads are virtually owned by the [1] Eastern, and operated by the Boston & Maine, [2] Boston & Maine, and their earnings and expenses are included in the return of the Boston & Maine Railroad.

† Operated by the Boston & Maine.

	63.—Long Beach.*	64.—Newburyport.†	65.—New York and Boston Inland.‡
Liabilities.			
Capital stock,	$5,382 84[1]	$220,340 02	$139,960 00[1]
Funded debt,	–	300,000 00	–
Unfunded debt,	2,000 00	77,046 31	17,919 12
Surplus Sept. 30, 1888,	–	–	–
Total Liabilities,	7,382 84	597,386 33	157,879 12
Assets.			
Construction,	$7,042 89	$597,386 33	$157,835 82
Other property,	–	–	–
Cash and cash assets,	339 95	–	43 30
Total Assets,	7,382 84	597,386 33	157,879 12

* Road in process of construction.

†. This road is virtually owned by the Boston & Maine, and its earnings and expenses are included in the return of that road.

‡ Obtained a certificate of incorporation, but has not yet commenced the construction of its road.

[1] Paid in.

Attached to page 3 (Income Account) of the return of the New York & New England Railroad Company is the following explanatory statement: —

The items added to the debit balance of the profit and loss account at the beginning of the year, aggregating $104,947.18, are thus explained: —

First. Item of $2,811.52 worthless accounts charged off. When the present auditor took charge of the accounts of the company he found some $70,000.00 of accounts collectible, many of which had been standing from two to five years. Of these, some $60,000.00 have been collected, and accounts to the amount of $2,811.52 have been found definitely uncollectible and have been charged off.

Second. The amount of expenditures during the fiscal year for rentals, renewals of roadway, equipment, etc., pertaining to the business of former years, amounts to $83,191.29, and consists of the following items: —

Rhode Island and Massachusetts Improvement Account,		$11,342 84
3 passenger coaches,	$12,900 00	
5 baggage cars,	9,493 20	
3 combination cars,	12,000 00	
92 dump coal-cars,	19,792 25	
20 gondola coal-cars,	8,480 00	
18 box cars,	7,533 00	
1 flat car,	300 00	
		70,498 45
Rent of New Britain station, July to September, 1887,		1,350 00
Total,		$83,191 29

The explanation of which is as follows: —

The Rhode Island and Massachusetts railroads were leased in 1877 for a period of ten years. These roads were cheaply built with iron rails and temporary wooden culverts at many places, and for four or five years before the expiration of the lease they needed repairs and renewals, which were not made in consequence of the near expiration of the lease. This company made new leases which took effect Oct. 1, 1887, for ninety-nine years, and, in the spring of 1888, the iron rails remaining in the main track were replaced with new steel, the cross-ties were renewed, and the track was put in first-class order and condition. The expense of this work was $22,685.68, of which one-half was charged to the profit and loss account as representing improvements which should have been made during preceding years, and the balance was charged to operating expenses. After making up the annual report for the preceding year, the present management discovered that there were passenger coaches, baggage cars and freight cars to a considerable number, which had been destroyed prior to October, 1886 (most of them in 1882 and 1883), and which had not been replaced. The management felt it incumbent upon them to replace these cars; but, as they had not been destroyed during the current year, and as they had never

come into the possession of the present management, it was thought proper and expedient that the expense of their rebuilding should be charged to the profit and loss account. When built, they were actually new cars; but they clearly could not properly be charged to the improvement account, neither had they any relation to the expense of the past year, not having been on the road or used during the year.

The item of rent of the New Britain station for the preceding year was charged into this account, because the amount had not been ascertained until after the close of the last fiscal year; and, as it was much more than offset by earnings to the amount of $6,260.00 credited as income of former years, it was believed to be a proper charge to the profit and loss account.

Third. The item of discrepancy in the accounts of the Norwich & Worcester lease, $18,944.37, is believed to have originated in a settlement made in 1879, when a change in the method of settlement with that company was made. It was not discovered until the accounts of the lessee of the Norwich & Worcester Railroad, heretofore kept at Norwich, were transferred to the general books of this company in Boston. The money had been paid long since, but the proper account had not been made of it, and as it had no relations whatever to the business of the past year, it was charged to the profit and loss account. It is the desire of the management to make such showing of all the transactions of the company as may be easily understood by the stockholders and the public, and, in the opinion of its officers, it would be as wrong to charge to the operating expenses of the current year items of the above character, which belong to the transactions of former years, and thereby make the annual showing so much worse than the fact, as it would have been to charge to the improvement account expenditures which should belong to the maintenance, and thereby make the showing better than the fact.

CORRESPONDENCE.

COMMONWEALTH OF MASSACHUSETTS.

BOARD OF RAILROAD COMMISSIONERS, No. 20 BEACON STREET,
BOSTON, Dec. 8, 1888.

To the President and Directors of the New York & New England R. R. Co.

DEAR SIRS: — In accordance with section 26, chapter 112, Public Statutes, the Board hereby notifies you that the annual return of your company for the year ending Sept. 30, 1888, appears to be defective, in that the entry "Expenditures during the fiscal year for rentals, renewals of roadway, equipment, etc., pertaining to the business of former years, $83,191.29," is made in the profit and loss account on page 3 of the return; whereas, the form for the return contemplates that such entry should be made under the head of operating expenses on pages 5 and 6. This alteration will necessitate changes in the answers to questions 2, 3 and 7 on page 3, making the answer to question 7 on page 3, "Balance for year (deficit), $51,741.31," instead of "Balance for year (surplus), $31,449.98."

The Board desire to say that it has been considered permissible for companies to include in the item on page 4 of the return, such items as you have placed in the profit and loss account on page 3; viz., "Premiums on sale of preferred stock, $33,290.42," and "Premium of sale second mortgage bonds, $4,353.75," which course, should you prefer to follow it, would reduce the deficit on page 3 to $14,097.14.

Yours truly,

(Signed) GEORGE G. CROCKER,
Chairman.

For the Board.

NEW YORK & NEW ENGLAND RAILROAD COMPANY,
VICE-PRESIDENT'S OFFICE, 244 FEDERAL ST.,
BOSTON, MASS., Dec. 14, 1888.

To the Honorable Board of Railroad Commissioners of the State of Massachusetts, Hon. GEORGE G. CROCKER, *Chairman, No. 20 Beacon St., Boston.*

DEAR SIRS: — Your esteemed favor of the 8th inst., addressed to the president and directors of the New York & New England Railroad Company, notifying this company of an alleged defect in its return for the year ending Sept. 30, 1888, and pointing out the manner in which the same should be amended, has been received, and its suggestions have been carefully considered.

I beg to say in reply that the president and directors of this company, under the obligation of their several oaths, made the return in question after a full consideration of the points of objection heretofore noted by your honorable board, and set forth in your communication of the 8th inst., and they are satisfied that the return is correct in fact, and that they could not conscientiously alter the return in the manner and to the effect indicated in your letter. The reasons for the charges referred to being made against profit and loss and not against operating expenses are fully set forth in the report, and in stating the position of the company and the objections of your board we shall be glad to have our reasons stated.

To me, individually, it seems very objectionable to allow premium on bonds and stock sold to be included among the current earnings of the company. We have endeavored to set forth in our report all the facts necessary to enable any stockholder or other person to form a proper and correct estimate of the business of the company and of the expenses incurred in carrying it on. I consider the charging of the cost of permanent improvements into operating expenses, without any specification of the same, as a withholding from the stockholders and from the public of information which they are entitled to have, and which they need in order to form a correct opinion of the status of the company.

For the reasons stated, I must therefore respectfully decline to alter our return in the manner suggested.

Yours very respectfully,

(Signed) WM. P. SHINN,
Vice-President.

TABULATED COMPARATIVE RESULTS

OF THE

CONDITION AND OPERATION

OF SEVERAL OF THE

RAILROAD CORPORATIONS OF THE STATE.

COMPILED FROM REPORTS.

TABULATED COMPARATIVE RESULTS OF RAILROAD CORPORATIONS.

RAILROADS.	STOCK, DEBT AND COST PER MILE OF ROAD OWNED.					
	66. — Stock paid in.	**67.** — Net Debt.	**68.** — Total Stock and Net Debt.	**69.** — Construction.	**70.** — Equipment.	**71.** — Total Permanent Investments.
Boston & Albany,	$65,677 13	$28,351 73	$94,028 86	$83,575 27	$10,329 04	$95,993 15
Boston & Lowell,	56,370 68	60,895 19	117,265 87	73,859 18	8,398 79	124,088 09
Boston & Maine,	56,451 61	27,078 63	83,530 24	77,588 21	10,549 84	98,901 41
Boston & Providence,	62,743 13	30,828 47	93,571 60	79,151 84	13,665 99	97,760 32
Eastern,	68,554 36	82,764 25	151,318 61	121,993 06	12,183 01	159,899 45
Fitchburg,	69,470 32	51,857 62	121,327 94	108,418 65	11,780 91	122,217 92
New York & New England,	61,642 69	42,555 71	104,198 40	92,418 72	11,189 62	105,087 72
Old Colony,	25,081 52	23,622 82	48,704 34	39,898 81	4,745 97	48,456 16
Average,	$54,098 23	$41,262 18	$95,360 41	$79,600 76	$9,455 13	$95,787 34
Cheshire,	$40,158 52	$9,889 51	$50,048 03	$44,962 03	$6,178 04	$51,140 06
Connecticut River,	46,195 17	2,636 37	48,831 54	53,158 62	7,349 00	66,521 04
New Haven & Northampton,	19,316 84	29,505 27	48,822 11	44,366 22	7,153 18	51,842 90
New York, New Haven & Hartford,	109,556 12	3,737 53	113,293 65	109,716 55	21,637 80	138,420 47
Norwich & Worcester,	39,365 18	9,980 97	49,346 15	53,949 18	2,716 91	60,794 07
Providence & Worcester,	49,593 33	12,860 94	62,454 27	69,430 47	11,406 47	80,837 14
Average,	$53,913 73	$11,188 41	$65,102 14	$64,057 36	$10,470 77	$77,619 96
Average 14 roads,	$54,057 25	$34,581 57	$88,638 82	$76,147 95	$9,680 74	$91,751 64

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	EARNINGS AND EXPENSES PER MILE ROAD OPERATED.			EARNINGS AND EXP. PER TOTAL REVENUE TRAIN MILE.		
	72.—Total Transportation Earnings.	**73.**—Operating Expenses.	**74.**—Net Earnings.	**75.**—Total Transportation Earnings.	**76.**—Operating Expenses.	**77.**—Net Earnings.
Boston & Albany,	$21,744 15	$15,141 39	$6,602 76	$1.716	$1.195	$0.521
Boston and Maine,	10,526 67	7,132 22	3,394 45	1.472	.997	.475
Fitchburg,	14,070 99	10,869 02	3,201 97	1.359	1.050	.309
New York & New England,	10,940 05	7,563 03	3,377 02	1.585	1.096	.489
Old Colony,	11,002 24	7,884 70	3,117 54	1.742	1.248	.494
Average,	$12,460 37	$9,011 66	$3,448 71	$1.536	$1.111	$0.425
Cheshire,	$9,167 63	$6,085 17	$3,082 46	$1.151	$0.764	$0.387
Connecticut River,	12,363 65	9,076 76	3,286 89	1.955	1.435	.520
New York, New Haven & Hartford,	19,222 47	13,428 06	5,794 41	1.823	1.273	.550
Providence & Worcester,	26,480 73	18,522 72	7,958 01	2.282	1.596	.686
Average,	$18,047 27	$12,640 69	$5,406 58	$1.820	$1.275	$0.545
Average 9 roads,	$13,470 37	$9,667 71	$3,802 66	$1.596	$1.146	$0.450

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	Expenses per Total Train Mile.							
	78. — Repairs of Road.*	**79.** — New Rails.	**80.** — Repairs of Bridges.	**81.** — Repairs of Locomotives.	**82.** — Fuel.	**83.** — Oil and Waste.	**84.** — Repairs of Passenger, Baggage and Mail Cars. †	**85.** — Repairs of Freight and other Cars. ‡
Boston & Albany,	$0.1246	$0.0301	$0.0306	$0.0627	$0.0968	$0.0103	$0.1787	$0.2031
Boston & Maine,	.1124	.0166	.0351	.0416	.0958	.0043	.0815	.1344
Fitchburg,	.1144	.0242	.0090	.0508	.1024	.0049	.0639	.1214
New York & New England,	.1097	.0081	.0216	.0580	.1107	.0054	.0454	.1463
Old Colony,	.1771	.0081	.0294	.0413	.0982	.0071	.1180	.1839
Average,	$0.1241	$0 0175	$0.0284	$0.0505	$0.1006	$0.0065	$0.0976	$0.1520
Cheshire,	$0.0825	$0.0110	$0.0049	$0.0389	$0.1407	$0.0092	$0.0762	$0.0505
Connecticut River,	.2159	.0297	.0532	0547	.1097	.0065	.1790	.3290
New York, New Haven & Hartford,	.1583	.0233	.0312	.0569	.0833	.0072	.1064	.1135
Providence & Worcester,	.1053	.0375	.0932	.0460	.1125	.0044	.1337	.2992
Average,	$0.1614	$0.0244	$0.0373	$0.0544	$0.0922	$0.0070	$0.1134	$0.1331
Average 9 roads,	$0.1321	$0.0190	$0.0303	$0.0513	$0.0988	$0.0066	$0.1011	$0.1484

* Including cost of new ties. † Per passenger train mile. ‡ Per freight train mile.

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	REPAIRS.			AVERAGES, ETC.			
	86. — Per Locomotive.	**87.** — Per Passenger, Baggage and Mail Car.	**88.** — Per Freight Car.	**89.** — Per Passenger: Average Distance travelled.	**90.** — Per Ton of Freight: Average Distance carried.	**91.** — Average No. of Passengers per Train Mile.	**92.** — Average No. of Tons of Freight per Train Mile.
Boston & Albany,	$1,476 45	$1,292 62	$87 56	17.6	108.7	83	157
Boston & Maine,	1,052 71	580 34	48 97	12.6	48.0	60	111
Fitchburg,	1,388 00	533 67	42 47	15.3	94.4	44	161
New York & New England,	1,472 76	371 67	51 08	12.2	78.7	49	134
Old Colony,	912 94	537 17	55 91	13.0	33.8	74	84
Average,	$1,283 07	$675 82	$58 06	13.6	70.1	62	125
Cheshire,	$779 42	$342 08	$37 62	29.0	52.6	36	92
Connecticut River,	1,115 32	1,073 83	89 57	10.4	24.4	51	130
New York, New Haven & Hartford,	1,895 57	639 53	50 80	24.7	71.4	83	122
Providence & Worcester,	1,070 99	749 47	53 65	8.2	28.0	69	143
Average,	$1,542 27	$668 93	$53 73	20.2	53.4	78	120
Average 9 roads,	$1,333 83	$674 07	$57 25	14.9	66.3	65	124

Tabulated Comparative Results of Railroad Corporations — Concluded.

RAILROADS.	**93.** — Passenger Earnings.	**94.** — Freight Earnings.	**95.** — Total Transportation Earnings.	**96.** — Operating Expenses.	**97.** — Net Earnings.	**98.** — Per cent. Operating Expenses to Trans. Earnings.
Boston & Albany,	$4,063,523 22	$4,385,816 52	$8,449,339 74	$5,883,640 66	$2,565,699 08	70
Boston & Maine,	7,023,949 46	5,700,568 81	12,724,518 27	8,621,345 08	4,103,173 19	68
Fitchburg,	1,880,908 86	3,312,411 76	5,193,320 62	4,011,539 65	1,181,780 97	77
New York & New England,	1,954,751 65	3,137,845 12	5,092,596 77	3,520,592 02	1,572,004 75	69
Old Colony,	3,783,748 25	2,416,565 92	6,200,314 17	4,443,423 10	1,756,891 07	72
Cheshire,	199,381 81	387,438 51	586,820 32	389,511 70	197,308 62	66
Connecticut River,	471,585 14	515,652 05	987,237 19	724,779 40	262,457 79	74
New York, New Haven & Hartford,	5,648,184 58	4,118,370 42	9,766,555 00	6,822,528 17	2,944,026 83	70
Providence & Worcester,	563,692 60	771,200 99	1,334,893 59	933,730 43	401,163 16	70

COMPARISON OF RETURNS

1887 with 1888,

AND

SUMMARY TAKEN FROM RETURNS

OF

1882–1883–1884–1885–1886–1887–1888.

Summary taken from the Returns of 1887 and 1888.

	1887.	1888.	Increase.	Decrease.
Roadway.	Miles.	Miles.	Miles.	Miles.
Length of road and branches,	2,992.823	3,087.883	95.060	-
in Massachusetts,	2,018.258	2,063.918	45.660	-
Length of double track,	1,036.717	1,027.587	-	9.130
in Massachusetts,	740.389	743.469	3.080	-
Length of sidings,	1,360.009	1,443.310	83.301	-
in Massachusetts,	964.330	1,010.026	45.696	-
Total length as single track,	5,389.549	5,558.780	169.231	-
in Massachusetts,	3,722.977	3,817.413	94.436	-
Length of steel rails in track,	3,903.167	4,190.303	287.136	-
Length of iron rails in track,	1,586.382	1,368.477	-	217.905
Total miles of road operated,	4,131.884	4,131.783	-	.101
in Massachusetts,	2,051.504	2,071.466	19.962	-
Railroad crossings at grade,	39	39	-	-
over grade,	19	19	-	-
under grade,	19	19	-	-
Highway crossings at grade,	2,128	2,229	101	-
protected,	765	855	90	-
unprotected,	1,363	1,394	11	41
Assets.				
Construction,	$207,660,619 30	$211,245,282 40	$3,584,663 10	-
Equipment,	22,743,981 34	24,387,881 96	1,643,900 62	-
Lands,	2,634,545 11	2,788,707 50	154,162 39	-
Stocks,	8,374,339 26	9,203,359 41	829,020 15	-
Bonds,	1,064,525 12	655,869 69	-	$408,655 43
Other property,	2,400,478 60	2,178,492 01	-	221,986 59
Total permanent investments,	$244,878,488 73	$250,459,592 97	$5,581,104 24	-
Cash,	$3,585,665 42	$2,806,313 80	-	$779,351 62
Materials and supplies,	4,500,050 34	5,030,894 45	$530,844 11	-
Sinking fund,	3,562,112 50	2,519,753 68	-	1,042,358 82
Other cash assets,	12,764,704 67	13,653,835 39	889,130 72	-
Total cash and cash assets,	$24,412,532 93	$24,010,797 32	-	$401,735 61
Improvement and similar acc'ts,	2,048,393 60	4,646,847 37	$2,598,453 77	-
Profit and loss balance (deficit),	2,213,493 17	2,156,394 68	-	57,098 49
Total assets as per balance-sheet,	$273,552,908 43	$281,273,632 34	$7,720,723 91	-
Liabilities.				
Capital stock,	$150,469,414 02	$151,076,704 02	$607,290 00	-
Funded debt,	92,944,254 06	99,115,622 40	6,171,368 34	-
Unfunded debt,	15,162,767 07	16,983,925 52	1,821,158 45	-
Surplus,	14,976,473 28	14,097,380 40	-	$879,092 88
Total liabilities as per balance-sheet,	$273,552,908 43	$281,273,632 34	$7,720,723 91	-
Total number of stockholders,	39,705	40,242	537	-
in Massachusetts,	29,806	29,219	-	587
Stock held in Massachusetts,	$92,728,240 02	$94,212,555 02	$1,484,315 00	-
Persons employed,	35,300	38,928	3,628	-

Summary taken from the Returns of 1887 and 1888.

	1887.	1888.	Increase.	Decrease.
General Exhibit for the Year.				
Total income,	$53,650,438 27	$58,805,604 24	$5,155,165 97	-
Total expense, including taxes,	36,662,910 59	40,641,941 95	3,979,031 36	-
Net income,	16,987,527 68	18,163,662 29	1,176,134 61	-
Rentals,	3,754,593 33	5,277,020 20	1,522,426 87	-
Interest accrued,	4,880,512 85	5,506,299 90	625,787 05	-
Dividends earned,	8,352,421 50	7,380,342 19	-	$972,079 31
per cent.,	5.55	4.88	-	0.67
Dividends declared,	7,550,901 61	7,986,226 10	435,324 49	-
per cent.,	5.02	5.29	0.27	-
Balance for the year,	801,519 89	605,883 91*	-	1,407,403 80
Surplus Sept. 30,	12,762,980 11	11,940,985 72	-	821,094 39
Transportation Earnings.				
From local passengers,	$17,009,841 66	$18,607,984 99	$1,598,143 33	-
through passengers,	5,950,080 34	6,205,254 77	255,174 43	-
express and extra baggage,	1,398,039 81	1,539,514 73	141,474 92	-
mails,	703,493 14	737,550 91	34,057 77	-
other sources,	224,281 74	278,350 37	54,068 63	-
Total passenger department,	$25,285,736 69	$27,368,655 77	$2,082,919 08	-
From local freight,	$11,621,372 13	$12,091,724 31	$470,352 18	-
through freight,	13,034,633 12	14,103,339 56	1,068,706 44	-
other sources,	126,916 40	156,315 19	29,398 79	-
Total freight department,	$24,782,921 65	$26,351,379 06	$1,568,457 41	-
Total transportation earnings,	50,068,658 34	53,720,034 83	3,651,376 49	-
Transportation expenses, including taxes,	$37,280,008 88	$41,297,368 63	$4,017,359 75	-
Mileage, Traffic, etc.				
Train miles, passenger,	18,522,488	20,262,326	1,739,838	-
freight,	13,057,794	13,693,603	635,809	-
Total revenue-train miles,	31,580,282	33,955,929	2,375,647	-
Miles run by other trains,	7,810,797	8,538,740	727,943	-
Total train miles,	39,391,079	42,494,669	3,103,590	-
Passengers, season ticket,	11,104,632	11,486,485	381,853	-
total number,	82,923,364	89,686,412	6,763,048	-
local mileage,	956,475,256	1,010,382,247	53,906,991	-
through mileage,	285,555,822	292,711,776	7,155,954	-
total mileage,	1,242,031,078	1,303,094,023	61,062,945	-
Freight, total tons carried,	24,605,140	25,787,383	1,182,243	-
local mileage,	432,270,692	451,636,927	19,366,235	-
through mileage,	1,085,661,320	1,234,286,687	148,625,367	-
total mileage,	1,517,932,012	1,685,923,614	167,991,602	-
Equipment.				
Locomotives,	1,550	1,635	85	-
Passenger cars,	2,191	2,443	252	-
Mail, baggage and express cars,	564	581	17	-
Freight cars (basis 8 wheels),	34,200	34,808	608	-

* Deficit.

Summary taken from Returns of 1882, 1883, 1884, 1885, 1886, 1887, 1888.

	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Main line in Massachusetts,	1,949.460	1,953.258	1,973.708	1,981.688	1,989.508	2,018.258	2,063.918
Double track in Massachusetts,	539.070	587.299	667.889	699.639	733.919	740.389	743.469
Sidings in Massachusetts,	768.195	799.264	832.393	855.300	892.676	964.330	1,010.026
Total in Massachusetts,	3,256.725	3,339.803	3,473.990	3,536.627	3,616.103	3,722.977	3,817.413
Amount of capital stock,	$122,976,262 26	$122,367,572 27	$127,668,290 27	$128,551,658 54	$130,687,969 02	$150,469,414 02	$151,076,704 02
Amount of stock held in Mass.,	80,602,561 35	81,477,470 02	85,332,908 02	85,444,154 02	84,734,764 02	92,728,240 02	94,212,555 02
Number of stockholders,	37,284	38,275	39,205	39,440	38,876	39,705	40,242
Stockholders in Massachusetts,	27,282	27,827	28,513	28,532	28,478	29,806	29,219
Gross debt,	$89,251,046 03	$91,235,835 97	$91,752,883 99	$93,782,585 30	$93,473,072 39	$108,107,021 13	$116,099,547 92
Net debt,	71,913,806 00	72,933,290 93	74,439,473 75	73,706,622 04	71,012,497 49	81,646,094 60	92,088,750 60
Cost of construction,	$163,724,377 54	$165,824,300 96	$176,899,373 56	$177,392,457 66	$178,013,772 71	$207,660,619 30	$211,245,282 40
Cost of equipment,	19,410,331 13	20,122,551 63	22,041,997 09	22,680,642 08	22,465,263 04	22,743,981 34	24,387,881 96
Cost of other property,	15,821,119 87	12,954,424 16	12,940,503 89	13,612,864 16	13,775,033 77	14,473,888 09	14,826,428 61
Total permanent investment,	198,955,828 54	198,901,276 75	211,881,874 54	213,685,963 90	214,254,069 52	244,878,488 73	250,459,592 97
Cash and cash assets,	17,337,240 03	18,302,545 04	17,313,410 24	20,075,963 26	22,460,574 90	26,460,926 53	24,010,797 32
Improvement and similar accounts,	–	–	–	–	–	–	4,646,847 37
Total property and assets,	216,293,068 57	217,203,821 79	229,195,284 78	233,761,927 16	236,714,644 42	271,339,415 26	279,117,237 66
Total income from all sources,	$40,846,370 10	$43,380,387 63	$43,119,302 70	$44,623,350 35	$49,315,820 50	$53,650,438 27	$58,805,604 24
Total expense,	29,944,167 15	32,479,907 71	32,070,684 51	32,504,375 47	35,887,239 18	40,417,503 92	45,918,962 15
Net income,	10,902,202 95	10,900,479 92	11,048,618 19	12,118,974 88	13,428,581 32	13,232,934 35	12,886,642 09
Interest accrued,	4,291,222 59	4,756,085 23	4,729,328 56	4,767,095 88	4,810,019 68	4,880,512 85	5,506,299 90
Dividends earned,	6,610,980 36	6,144,394 69	6,319,289 63	7,351,879 00	8,618,561 64	8,352,421 50	7,380,342 19
Percentage to capital stock,	5.37	5.02	4.95	5.72	6.70	5 55	4.88
Dividends declared,	6,271,139 86	6,379,721 10	6,535,054 92	6,551,704 15	6,857,506 30	7,550,901 61	7,986,226 10
Per cent.,	5.10	5.21	5.12	5.10	5.33	5.02	5.29
Balance for the year,	339,840 50	$235,326 41	$215,765 29	800,174 85	1,761,055 34	801,519 89	$605,883 91
Total surplus Sept. 30,	4,065,760 28	3,600,413 55	9,774,010 52	11,427,683 32	12,553,603 01	12,762,980 11	11,940,985 72

Taxes paid,	$1,830,437 00	$1,878,200 01	$2,024,559 81	$2,063,204 62	$2,106,565 25	$2,502,129 12	$2,785,326 61
Mileage, passenger trains,	13,636,169	14,244,658	15,157,425	16,212,988	17,268,159	18,522,488	20,262,326
Mileage, freight trains,	10,598,126	11,382,154	11,282,338	11,722,667	12,303,808	13,057,794	13,693,603
Mileage, other trains,	4,818,505	5,524,011	5,864,570	6,233,344	6,869,076	7,810,797	8,538,740
Total train mileage,	29,052,800	31,150,823	32,304,333	34,168,999	36,441,043	39,391,079	42,494,669
Total passenger mileage,	892,321,207	943,245,658	1,007,136,376	1,041,628,073	1,124,148,045	1,242,031,078	1,303,094,023
Through passenger mileage,[2]	242,970,014	240,784,477	1,245,506,939	245,334,025	258,793,501	285,555,822	292,711,776
Total freight mileage,	1,130,070,652	1,220,821,418	229,368,472	1,266,160,455	1,391,626,438	1,517,932,012	1,685,923,614
Through freight mileage,[2]	777,203,347	822,282,988	870,891,828	887,168,408	980,366,552	1,085,661,320	1,234,286,687
Total passengers carried,	55,868,694	61,530,747	66,517,265	69,603,700	75,842,581	82,923,364	89,686,412
Total tons of freight carried,	19,061,164	20,202,881	20,273,920	20,577,096	22,925,532	24,605,140	25,787,383
Total season-ticket passengers,	12,674,117	12,769,420	11,436,929	10,694,750	10,810,716	11,104,632	11,486,485
Number persons employed,	27,403	29,844	30,590	30,069	31,188	35,300	38,928
Locomotives,	1,222	1,286	1,391	1,416	1,445	1,550	1,635
Passenger cars,	1,658	1,790	1,948	1,993	2,058	2,191	2,443
Mail and baggage cars,	463	482	525	509	518	564	581
Freight cars,	26,382	28,008	29,701	29,957	31,319	34,200	34,808
Steel rails,	2,466.203	2,774.431	3,121.720	3,336.476	3,573.910	3,903.167	4,190.303
Iron rails,	2,109.232	1,943.138	1,836.857	1,703.546	1,554.932	1,586.382	1,368.477

[1] Including operating expenses, taxes and rentals.

[2] Mileage to and from other roads.

[3] Deficit.

PART II.

RAILROAD REPORTS

FOR THE

YEAR ENDING SEPTEMBER 30, 1888.

[As corrected by the Board.]

REPORT

OF THE

ATTLEBOROUGH BRANCH RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to the Boston & Providence Railroad Company and operated by the Old Colony Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$9,309 00
Total expense (including taxes),		88 20
Net income,		9,220 80
Dividends declared (7 per cent.),		9,219 00
Balance for the year (surplus),		1 80
Balance at commencement of year,		781 21
Balance Sept. 30, 1888 (surplus),		783 01
ANALYSIS OF EARNINGS.		
Rents for use of road,		$9,219 00
Income from all other sources, viz.:		90 00
Interest on U. S. bond,	$90 00	
TOTAL INCOME FROM ALL SOURCES,		$9,309 00
ANALYSIS OF EXPENSES.		
Legal expenses,		$70 00
Stationery and printing,		2 50
Contingencies and miscellaneous,		15 70
TOTAL EXPENSES,		$88 20

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$131,416 48	
Bonds of United States,	1,000 00	
TOTAL PERMANENT INVESTMENTS,		$132,416 48
Cash,		66 53
TOTAL ASSETS,		$132,483 01
LIABILITIES.		
Capital stock,		$131,700 00
Profit & Loss balance,		783 01
TOTAL LIABILITIES,		$132,483 01

Description of Road.		
Main line of road from Attleborough to North Attleborough,		4 miles.
Main line of road in Massachusetts,		4 "
Total road belonging to this company,		4 "
Sidings and other tracks not above enumerated,		1 mile.
Same in Massachusetts,		1 "
Total Length of Track, computed as Single Track,		5 miles.
Same in Massachusetts,		5 "
Number of stations on all *roads owned* by this company,		3
Same in Massachusetts,		3
Bridges.		
Number of crossings of highways at grade,		11
Number of crossings of highways over railroad,		1
Number of crossings of highways under railroad,		1
Number of crossings at which gates or flagman are maintained,		3
Number of crossings at which there are neither signals nor flagmen,		8
Capital Stock.		
Capital stock authorized by charter,	$133,000 00	
Capital stock authorized by votes of company,	131,700 00	
Capital stock issued (number of shares, 1,317); amount paid in,		$131,700 00
Total Amount Paid in as per Books of the Co.,		131,700 00
Total number of stockholders,	41	
Number of stockholders in Massachusetts,	39	
Amount of stock held in Massachusetts,	$121,700 00	

Name and Residence of Officers.

H. F. Barrows, *President*, North Attleborough, Mass. H. N. Daggett, *Treasurer*, Attleborough Falls, Mass. J. R. Bronson, *Clerk of Corporation*, Attleborough, Mass.

Name and Residence of Directors last Elected.

H. F. Barrows, North Attleborough, Mass. H. N. Daggett, Attleborough Falls, Mass. J. R. Bronson, Attleborough, Mass. O. M. Draper, North Attleborough, Mass. A. A. Folsom, Boston, Mass.

Proper Address of the Company.

ATTLEBOROUGH BRANCH RAILROAD COMPANY,
Attleborough Falls, Mass.

H. N. DAGGETT,
O. M. DRAPER,
Directors.
H. N. DAGGETT,
Treasurer.

Commonwealth of Massachusetts.

Bristol, ss. Oct. 27, 1888. Then personally appeared H. N. Daggett and O. M. Draper, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JOSEPH E. POND,
Justice of the Peace.

REPORT

OF THE

BERKSHIRE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Housatonic Railroad Company of Connecticut.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$42,432 90
Total expense (including taxes),		10,857 00
Net income,		31,575 90
Dividends declared,		31,608 60
Balance for the year (deficit),		32 70
Balance at commencement of year,		14,274 55
Balance Sept. 30, 1888 (surplus),		14,241 85
ANALYSIS OF EARNINGS.		
Rents for use of road,		$42,000 00
Income from all other sources, viz.:		432 90
Dividend on 80 shares stock,	$421 44	
Interest on balance in bank,	11 46	
TOTAL INCOME FROM ALL SOURCES,		$42,432 90
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$433 00
Stationery and printing,		19 85
Outside agencies and advertising,		12 75
TOTAL EXPENSES,		$465 60
Taxes,		10,391 40
TOTAL EXPENSES AND TAXES,		$10,857 00

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$600,000 00	
Stock of Berkshire Railroad Company,	6,000 00	
TOTAL PERMANENT INVESTMENTS,		$606,000 00
Cash,		8,486 92
TOTAL ASSETS,		$614,486 92

Liabilities.		
Capital stock,		$600,000 00
Unfunded debt, viz.:		245 07
Dividends unpaid,	$245 07	
Profit & Loss balance,		14,241 85
Total Liabilities,		$614,486 92

Description of Road.		
Main line of road from Sheffield to West Stockbridge,		22 miles.
Main line of road in Massachusetts,		22 "
Capital Stock.		
Capital stock authorized by charter,	$800,000 00	
Capital stock authorized by votes of company,	600,000 00	
Capital stock issued (number of shares, 6,000); amount paid in,		$600,000 00
Total Amount paid in as per Books of the Co.,		600,000 00
Total number of stockholders,	242	
Number of stockholders in Massachusetts,	136	
Amount of stock held in Massachusetts,	$375,300 00	

Name and Residence of Officers.

Egbert Hollister, *President*, Great Barrington, Mass. Daniel R. Williams, *Treasurer and Clerk of Corporation*, Stockbridge, Mass.

Name and Residence of Directors last Elected.

Egbert Hollister, Great Barrington, Mass. F. T. Whiting, Great Barrington, Mass. Henry T. Robbins, Great Barrington, Mass. Chas. J. Taylor, Great Barrington, Mass. D. R. Williams, Stockbridge, Mass.

Proper Address of the Company.

BERKSHIRE RAILROAD COMPANY,
Stockbridge, Mass.

EGBERT HOLLISTER,
D. R. WILLIAMS,
CHAS. J. TAYLOR,
Directors.

D. R. WILLIAMS,
Treasurer.

Commonwealth of Massachusetts.

Berkshire, ss. Great Barrington, Oct. 3, 1888. Then personally appeared Egbert Hollister, D. R. Williams and Charles J. Taylor, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

F. N. DELAND,
Notary Public.

REPORT

OF THE

BOSTON & ALBANY RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$8,882,663 82
Total expense (including taxes),		6,471,956 32
Net income,		2,410,707 50
Rentals:		78,000 00
Ware River Railroad,	$52,500 00	
Pittsfield & North Adams Railroad,	22,500 00	
North Brookfield Railroad,	3,000 00	
Interest accrued during year:		662,900 00
On funded debt,	$662,900 00	
Dividends declared (8 per cent.),		1,600,000 00
Balance for the year (surplus),		69,807 50
Balance at commencement of year (deficit),		617,190 41
Balance Sept. 30, 1888 (deficit),		547,382 91
ANALYSIS OF EARNINGS.		
From local passengers,		$2,367,689 37
through passengers (to and from other roads),		1,248,618 79
express and extra baggage,		264,947 87
mails,		150,791 04
other sources, passenger department,		31,476 15
Total earnings from passenger department,		4,063,523 22
From local freight,		2,225,742 16
through freight (to and from other roads),		2,160,074 36
Total earnings from freight department,		4,385,816 52
TOTAL TRANSPORTATION EARNINGS,		8,449,339 74
Income from all other sources, viz.:		433,324 08
Rent of buildings,	$137,434 72	
Elevators, wharves and storehouses,	157,885 14	
Gravel,	121,412 94	
Interest,	9,831 28	
Premium on stock,	6,760 00	
TOTAL INCOME FROM ALL SOURCES,		$8,882,663 82
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$150,194 52
Legal expenses,		18,088 71
Insurance,		35,728 65
Stationery and printing,		40,773 92
Outside agencies and advertising,		5,314 13
Contingencies and miscellaneous,		46,162 62
Repairs of bridges (including culverts and cattle-guards),		182,353 62
Repairs of buildings,		197,117 56
Repairs of fences, road-crossings and signs,		29,571 37

Renewal of rails,	$179,445 00
[Number tons steel laid, 5,505.]	
[Number tons iron laid, 466.]	
Renewal of ties,	158,304 74
[Number laid, 312,842.]	
Repairs of road-bed and track,	583,541 02
Repairs of locomotives,	373,541 51
Fuel for locomotives,	577,209 75
[Tons of coal, 184,382; cords of wood, 1,364.]	
Water supply,	39,746 27
Oil and waste,	61,488 59
Locomotive service,	454,722 45
Repairs of passenger-cars,	417,516 58
Passenger-train service,	214,849 64
Passenger-train supplies,	14,754 12
Repairs of freight-cars,	525,334 84
Freight-train service,	363,471 91
Freight-train supplies,	2,044 95
Mileage freight-cars,	71,187 21
Telegraph expenses,	20,521 61
Loss and damage, freight and baggage,	26,206 48
Loss and damage, property and cattle,	13,664 74
Personal injuries,	53,637 08
Agents and station service,	945,494 83
Station supplies,	81,652 24
TOTAL OPERATING EXPENSES,	$5,883,640 66
Taxes,	588,315 66
TOTAL OPERATING EXPENSES AND TAXES,	$6,471,956 32
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.	
Other expenditures charged to property account:	
Lands,	$63,433 83
TOTAL CHARGES TO PROPERTY ACCOUNTS,	$63,433 83
Property sold (or reduced in valuation on the books) and credited property accounts during the year:	
Stock West Stockbridge Railroad, $13,000 00	
Total credits to property accounts,	13,000 00
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,	$50,433 83

Balance Sheet Sept. 30, 1888.

ASSETS.

Cost of road,	$24,368,716 50	
Cost of equipment,	3,145,400 00	
Real estate,	160,609 79	
Springfield & North-Eastern Railroad,	438,358 28	
Newton Highland Branch,	411,400 00	
Riverside Branch,	231,865 76	
Stock of Hudson River Bridges,	475,485 00	
TOTAL PERMANENT INVESTMENTS.		$29,231,835 33
Cash,	$732,280 15	
Due from agents and companies,	365,163 82	
Materials and supplies,	529,470 98	

Sinking fund,	$1,445,549 14	
Total Cash Assets,		$3,072,464 09
Profit & Loss balance,		547,382 91
Total Assets,		$32,851,682 33
Liabilities.		
Capital stock,		$20,000,000 00
Funded debt,		10,858,000 00
Unfunded debt, viz.:		848,133 19
Interest unpaid,	$10,805 00	
Dividends unpaid,	441,632 00	
Vouchers and accounts,	395,696 19	
Account improvement fund,	$1,073,177 80	1,145,549 14
Ware River sinking fund,	72,371 34	
Total Liabilities,		$32,851,682 33

Mileage, Traffic, Etc.	
Passenger-train mileage,	2,336,543
Freight-train mileage,	2,585,729
Total Revenue-Train Mileage,	4,922,272
Switching-train mileage,	824,407
Other train mileage,	213,871
Total Train Mileage,	5,960,550
Number of season-ticket passengers,	726,306
Number of local passengers (including season),	9,873,027
Number of through passengers (to and from other roads),	1,118,842
Total Number of Passengers Carried,	10,991,869
Local passenger mileage (local passengers carried one mile),	132,852,056
Through passenger mileage (through passengers carried one mile),	60,303,264
Total Passenger Mileage,	193,155,320
Number tons local freight,	1,942,846
Number tons through freight (to and from other roads),	1,786,051
Total Number Tons Freight Carried,	3,728,897
Local freight mileage (tons local freight carried one mile),	127,336,511
Through freight mileage (tons through freight carried one mile),	277,914,164
Total Freight Mileage,	405,250,675
Average weight of passenger-trains (exclusive of passengers),	156 tons.
Average number of cars in passenger-trains,	6
Average weight of freight-trains (exclusive of freight),	225 tons.
Average number of cars in freight-train,	24
Average number of persons employed,	5,826
Mileage local passengers (north or east),	65,839,056
Mileage local passengers (south or west),	67,013,000
Mileage through passengers (north or east),	31,338,468
Mileage through passengers (south or west),	28,964,796
Mileage local freight (north or east),	91,357,927
Mileage local freight (south or west),	35,978,584
Mileage through freight (north or east),	232,202,060
Mileage through freight (south or west),	45,712,104
Description of Road.	
Main line of road from Boston to Albany,	201.65 miles.
Main line of road in Massachusetts,	162.35 "
Main line of road in New York,	39.30 "
Double track on main line,	201.65 "
Same in Massachusetts,	162.35 "

Branches owned by company, viz.:	
Newton Highland (double track),	9.93 miles.
Grand Junction (part single and part double track),	9.30 "
Newton Lower Falls (single track),	1.10 "
Saxonville (single track),	3.70 "
Milford (single track),	12.00 "
Millbury (single track),	3.00 "
Athol (single track),	45.26 "
Athol (operated by N. Y. & N. E. R. R.) (single track),	1.25 "
Chatham & Hudson (single track),	17.33 "
Total length of branches owned by company,	102.87 "
Total length of branches owned by company in Massachusetts,	85.54 "
Total length of branches owned by company in New York,	17.33 "
Double track on branches,	15.95 "
Same in Massachusetts,	14.95 "
Total road belonging to this company,	304.52 "
Sidings and other tracks not above enumerated,	231.15 "
Same in Massachusetts,	197.18 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	753.27 "
Same in Massachusetts,	623.06 "
Total length of steel rails in tracks, not including steel-top rails,	619.86 "
[Weights per yard, 60 to 72 pounds.]	
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Pittsfield & North Adams Railroad, length,	18.55 miles.
Ware River Railroad, length,	49.35 "
North Brookfield Railroad, length,	4.00 "
Spencer Railroad, length,	2.18 "
Providence, Webster & Springfield Railroad, length,	11.23 "
Total length of above roads,	85.31 "
Total length of above roads in Massachusetts,	85.31 "
Total miles of road operated by this company,	388.58 "
Total miles of road operated by this company in Massachusetts,	331.95 "
Number of stations in Massachusetts on all *roads operated* by this company,	111
Number of telegraph offices in same,	81
Number of stations on all *roads owned* by this company,	102
Same in Massachusetts,	87
EQUIPMENT.	
Number of locomotives,	253
Number of passenger-cars,	253
Number of parlor or sleeping cars,	15
Number of baggage, mail and express cars,	55
Number of freight-cars (basis of 8 wheels),	6,000
Number of other cars,	606

LIST OF ACCIDENTS.

	FROM CAUSES BEYOND THEIR OWN CONTROL (IN MASSACHUSETTS).		FROM THEIR OWN MISCONDUCT OR CARELESSNESS (IN MASSACHUSETTS).		TOTAL IN MASSACHUSETTS.		TOTAL ON WHOLE ROAD OPERATED.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	5	-	10	-	15	-	16
Employees,	2	23	11	176	13	199	13	210
Others,	-	-	26	38	26	38	28	40

REPORT OF ACCIDENTS ON THE BOSTON & ALBANY RAILROAD IN MASSACHUSETTS FROM OCT. 1, 1887, TO SEPT. 30, 1888.

Oct. 1, 1887. — Lorenzo Behm, freight brakeman, while switching at North Adams station, went in between the cars to pull the pin, and fell and was run over and instantly killed.

October 4. — M. L. Bunker, freight brakeman, while pulling pin between cars in West Springfield yard, the slack of the train brought the opposite car against his leg, slightly injuring it.

October 5. — O. G. Carrigan, freight brakeman, in stepping off car while train was standing at Chester, turned his ankle on a stone.

October 6. — Chas. M. Cross of Nashua, N. H., while getting off train No. 13 at Westfield, stumbled on car steps and fell on station platform, bruising his face and shoulder.

October 9. — James Connor was struck by freight-train No. 103 while lying asleep on the track at Wellesley. He was but slightly injured.

October 7. — A. Jerome, freight brakeman, was coupling cars in West Springfield yard and the bunters broke the link, part of which struck Jerome on the arm, slightly injuring him.

October 10. — H. R. Barlow, freight brakeman, had his hand caught while coupling cars at Palmer, and bruised.

October 11. — E. C. Worth, freight brakeman, was at work on night switch-train at Boston, and while coupling engine to car was caught between the bunters, and his hip and arm bruised.

October 11. — Theidore Girou, freight brakeman, was coupling two flat-cars loaded with iron, and slack of train came back and caught his right leg between the iron, inflicting a flesh wound. Accident happened in Springfield freight-yard.

October 11. — Walter Sheldon, freight brakeman, was coupling engine to car and had his thumb caught between the bunters and jammed. Hudson.

October 12. — A. Drew, freight brakeman, had his hand jammed while coupling engine to car at North Grafton.

October 14. — C. Stevens, freight brakeman, fell off cars at Brighton while pulling pin, and struck on his back on a rail. Somewhat injured.

October 14. — Chas. A. Seabury, freight brakeman, had thumb on left hand jammed while coupling cars at Boston.

October 17. — T. F. Carey, freight brakeman, was holding the nozzle of the hose while engine No. 244 was taking water at Spencer, and the pressure of the water threw Carey off the tender onto the ground. He struck on a rail, injuring his head.

October 18. — Philip Valley, freight brakeman, was walking over the train in Worcester yard, his lantern not lighted, and stepped from a house-car on to a flat-car loaded with granite blocks. He struck on his right side on one of the blocks, and his side and back were injured badly. Time, 10.25 P.M.

October 18. — J. H. Franklin, freight brakeman, fell between the cars at South Worcester, while applying brake, and his leg was run over and cut off below the knee.

October 17. — E. Twombley, freight brakeman, had left hand caught between drawbars while coupling, and badly jammed. Place of accident, Worcester.

October 20. — Peter McCloskey jumped from the rear platform on smoking-car of train No. 15 after train had left Newtonville. He fell and his legs went under the wheels, cutting one off at the knee and the other at the ankle.

October 20. — E. H. Frost, freight brakeman, was applying brake on car and brake-chain broke, throwing him onto the car and injuring his stomach. Place of accident, Washington.

October 21. — Chas. Parker, freight brakeman, was found about 300 feet east of West Chester Park bridge, Boston, lying between the tracks with his head crushed. He was unconscious when found, and it is not known how he came by his injuries, but it is supposed that he fell from the switch-train on which he was employed.

October 20. — John Flaherty, freight brakeman, was run over by switch-engine in Worcester yard and his right leg and right arm cut off. He stood in the middle of the track and attempted to jump on the forward end of the engine as it was coming toward him, lost his balance and fell back on the track.

October 25. — Patrick Mallett, section man, was walking on the track near Everett Street crossing, Allston, and was struck by a car that was being switched. He was knocked down and slightly bruised.

October 26. — Alfred Copeland, freight brakeman, while coupling cars at East Boston, had his hand caught between the drawbars and badly bruised.

October 20. — Noah Avery was stealing a ride on a freight-train from Warren to West Warren, and when he jumped off at West Warren he severely injured his foot. He was carried to his home and his foot amputated.

October 25. — William Blake was found on the track east of Russell, having been run over and killed while walking on the track.

October 25. — Chas. Sanders, freight brakeman, had his hand slightly jammed while coupling cars at Boston.

October 27. — Thomas Kehoe of East Weymouth, Mass., attempted to board passenger-train No. 34 at Concord Street crossing, South Framingham, and as he was getting on his hat fell off. He jumped off backwards to get it and fell on the crossing, his legs going under the wheels, crushing them both at the ankles.

October 27. — Clarence Crawford of Boston attempted to board passenger-train No. 8 after it had started from Auburndale station, and fell between the depot platform and the track. Car steps struck him, causing internal injuries from which he died same day.

October 26. — Henry Beauregard of Hopedale was struck by the Milford Branch passenger-train while going over the crossing in a team. Team came in contact with the side-rod of the engine, and the man was knocked out and killed. The horse was injured so that it had to be killed. Whistle was sounded and bell rung. Medway Crossing east of Milford.

October 27. — M. O. Fisk, baggage-master, was uncoupling engine from passenger car at Webster, and had second finger on right hand caught and taken off at the first joint.

October 30. — P. J. Sullivan, porter in depot, attempted to board the caboose of a freight-train going through Springfield depot, and fell, his foot being run over.

October 29. — Charles McCarty, freight brakeman, while pulling pin caught his thumb between pin and bunter, slightly injuring him. Springfield freight yard.

October 22. — J. Crowley, freight brakeman, had finger injured while coupling cars at Boston.

October 28. — Cornelius Devine, freight brakeman, jammed his thumb and forefinger on left hand while pulling pin at Westborough.

November 3. — William Walsh, freight brakeman, had two fingers and thumb jammed while coupling cars in Springfield freight yard.

October 31. — Thomas J. Bishop, Woburn Centre, Mass., was found on the track dead, east of South Framingham. The body was badly mangled, and it is supposed the man was run over while walking on the track.

November 5. — Richard McCarty, freight brakeman, was struck in the back by corner of shed over platform at Wilder & Puffer's store-house, Springfield, while applying brake on car of switch-train, and knocked off onto the ground, bruising his leg.

November 5. — H. Curtiss, freight brakeman, caught his thumb between pin and deadwood, while pulling pin at Springfield.

November 3. — F. Dunham, freight conductor, was caught between engine and passenger-car while coupling at Millbury Junction, and his shoulder bruised.

November 3. — L. W. Richard, freight brakeman, was coupling cars, one of which was loaded with rails that reached over the end of car, and when Richard went down to pull pin, the slack of train brought cars together and caught his hand between car and iron, jamming it. Worcester.

November 5. — H. A. Haywood, freight brakeman, was injured about the head by being struck by stake used for pushing cars. Haywood was on front of switch engine, and as train passed cars on side track the stake struck the corner of the car and flew up, striking Haywood. Worcester.

November 7. — J. Sullivan, freight brakeman, was applying brake on car 19,180, N. Y. C., and the brake wheel came off the staff, throwing him to the ground. He struck on the ties, injuring his back and shoulders. Accident happened in Springfield freight yard.

November 8. — William Conley, freight brakeman, had one finger jammed while coupling cars at West Newton.

November 3. — Unknown man was struck by switch-engine in Boston yard and knocked down. He was intoxicated, and walked away apparently uninjured.

November 9. — B. M. Chellis, freight conductor, was pulling pin between engine and car and caught his thumb between bunter and top of pin. Accident happened at North Adams Junction.

November 10. — R. Farrell, freight brakeman, was run over and killed at Brookline Junction. Gravel train was throwing loaded cars in on an empty track, and switchman threw wrong switch and let cars in on track with loaded cars, and when the cars struck, Farrell, who was riding the rear car, was knocked off.

November 10. — Henry Farren, laborer, was standing near load of bags about to be hoisted into lighter at East Boston, and when the engine started to lift the bags they swung round and struck Farren, and knocked him overboard into the dock.

November 13. — Charles E. Voter, freight brakeman, was struck by West Chester Park bridge, Boston, and his head cut. He was on a milk-car and failed to clear the bridge.

November 13. — P. Sweeney, freight brakeman, was in caboose that was being switched, and engine struck caboose with such force as to knock Sweeney down against the stove, cutting his upper lip and loosening his teeth. Accident happened at North Adams Junction.

November 12. — C. G. Martin, freight brakeman, had his arm caught while pulling pin and bruised at the elbow. Accident happened at Westborough.

November 14. — John McLaughlin, engineer, attempted to board a freight-train at the west end of Connecticut River bridge, Springfield, to ride over the river, and slipped and fell. He was dragged on the bridge and his leg and side bruised.

November 15. — Charles Lint, freight brakeman, was caught between the drawbars while coupling engine and car, and his chest and side injured. Accident happened at North Grafton.

November 15. — Robert Simson, freight brakeman, had his arm injured while coupling cars at Boston.

November 16. — M. M. Wentworth, section foreman, was struck by engine No. 242 in Hinsdale yard, and thrown down, injuring his leg and side. Engineer blew the whistle and rang the bell.

November 16. — J. T. Miller, freight brakeman, had his arm injured while coupling cars at Charlton.

November 16. — Lewis Wiggins, freight brakeman, had one finger cut off while coupling cars at East Cambridge.

November 17. — W. A. Lamberton, freight brakeman, was applying brake on B. & A. car 2,184, loaded with stone, and when car struck others it shoved one of the stones onto his left foot, bruising it. Place of accident, Charlton.

November 17. — Charles M. June, 359 Pearl Street, New York, was struck by passenger-train No. 75 and killed, while walking on the track near Allston shops.

November 20. — John Chapel, freight brakeman, was walking side of train near Washington and stepped into a culvert and injured his side.

November 21. — John Chapel, freight brakeman, was caught while coupling engine to car, injuring his side. Place of accident, North Adams Junction.

November 19. — Edward Murphy, freight brakeman, had his hand caught while coupling engine to car equipped with Ames drawbar. Place of accident, South Framingham.

November 22. — H. Bean, freight brakeman, was putting on brake on B. L. car 2,735, and brake-head was so low that when he turned it he caught his hand between brake-head and top of car. Accident happened in Worcester freight-yard.

November 23. — F. A. Marshall, freight conductor, was coupling a car equipped with the Ames drawbar, and the casting that holds tongue of bunter broke, catching his fingers between the drawbars and badly jamming them. Accident happened at Worcester.

November 23. — James Adams, fireman, was found lying on the track near South Framingham, having fallen from his engine and severely cut his head.

November 25. — George Cannon, freight brakeman, slipped and fell between the cars, about one mile east of Chester, and was run over and fatally injured.

November 24. — Unknown man was struck by engine of train No. 31 on the first crossing west of West Newton and knocked down. His clothes were torn but he received no other injury.

November 24. — William and Charles Hannon, Joseph Burke and Patrick D. Gorham. These men were struck by passenger train No. 45 while on Washington Street crossing, east of Newton, in a carryall. William and Charles Hannon were instantly killed, Joseph Burke fatally injured, and Patrick D. Gorham injured about the head, not severely. Gates were down and the team was driven on the poles, breaking them and allowing the horse to get on the track. Horse was killed.

November 25. — G. Hathorn, freight brakeman, was thrown from cars that were being switched, and his side and hip injured. Place of accident, Cottage Farm.

November 28. — Frank Driscoll, freight brakeman, was walking over M. D. T. car 7,300 and turned his ankle on running-board. Place of accident, West Springfield yard.

November 26. — Robert Campbell, freight-house man, was pulling pin between engine and car and caught his feet between the drawbars, and slightly bruised. Place of accident, West Newton.

November 29. — Unknown man was run over by freight-train 28 and instantly killed. Train was coming out of Worcester yard and this man threw himself in front of the engine. He was pushed off, and then threw himself under the cars.

November 30. — George Rochford, freight brakeman, was coupling switch-engine to passenger-car equipped with Miller bunter. The bunter on the engine slipped by the bunter on the car and caught his leg, severely bruising him. Place of accident, Springfield freight yard.

December 1. — John McCarthy of Taunton, Mass., was stealing a ride on a freight-train from Adams to Pittsfield, and when cars stopped at Maple Grove his foot was caught between the drawbars and sprained.

December 2. — J. T. Miller, freight brakeman, was struck by switch-engine in West Springfield yard and slightly hurt.

November 25. — W. T. Merrill, freight brakeman, had his back and chest injured while coupling engine to car. Place of accident, North Wilbraham.

December 1. — Martin King, freight brakeman, was thrown from dump-cars by cars jumping track, breaking his leg below the knee. Place of accident, Boston.

December 4. — John McCannon, freight conductor, was coupling two cars equipped with the Ames drawbar and his hand was caught and four fingers jammed. Place of accident, Boston yard.

November 24. — Miss Lizzie Leonard of Newton Lower Falls was struck by gates at Washington Street crossing, Newton Lower Falls, inflicting a slight wound on the forehead. Miss Leonard was on the crossing in a team, and was struck while the gates were being lowered.

December 3. — W. H. Barney, freight brakeman, was coupling engine to car and caught his finger, breaking the bone. Car had cast-iron drawbar. Place of accident, West Springfield yard.

December 5. — John Chapel, freight brakeman, was setting up the brake and it flew off, catching his finger and spraining it. Accident happened between Washington and Becket.

December 7. — Mrs. Clinton of Somerville was walking side of track and was struck by cylinder of engine of train No. 241. She had got under the gates, which were down for the train. Place of accident, East Cambridge.

December 9. — Henry Sullivan, freight conductor, was pulling the tongue out of an Ames drawbar and the engine backed the cars and caught his fingers. Place of accident, West Springfield freight yard.

December 7. — Bartley Walsh, freight brakeman, was on top of cars that were being switched, and when they struck other cars he was thrown down onto the footboard cutting his nose. Place of accident, West Springfield yard.

December 10. — Benny Asher, a fourteen-year-old boy, was found dead on the track, 350 feet east of Main Street crossing, Springfield. It is supposed that he was run over while attempting to board a freight-train.

December 9. — James E. Brown of Rock Bottom, Mass., jumped off train No. 104 at South Framingham, and fell down. He walked away apparently uninjured.

November 12. — Joseph Donnelly, brakeman on gravel-train, had one finger jammed while coupling cars at Brookline Junction.

December 10. — E. W. Huntington, freight brakeman, was throwing switch and did not get it over in time, and his hand was struck by caboose and slightly injured. Place of accident, Boston.

December 16. — William Thomas, freight brakeman, was on top of Maine Central car No. 3,043, and the wind blew the top of the car off, and Thomas with it, injuring his shoulder and head. Place of accident, Howlands.

December 17. — J. Connley, freight brakeman, was getting off train at Wellesley and fell, spraining his wrist.

December 16. — William Clark, freight brakeman, was applying brake, and the rod that connects with brake beam gave away and he fell, striking on a rail and injuring his back. Place of accident, Allston.

December 15. — D. Hannon, freight brakeman, was pulling pin between cars and caught his finger between head of pin and deadwood. Car had Safford drawbar. Place of accident, West Springfield yard.

December 18. — M. B. Stickles, freight brakeman, was coupling cars in West Springfield yard and caught his arm between the deadwoods, badly bruising it.

December 18. — W. Leahy, freight brakeman, was running caboose on to train and the brake failed to hold, and caboose struck train and threw him off and cut his face. Place of accident, Washington.

December 15. — David Dunn of Clearfield, Penn., was found beside the track east of South Framingham, with his left hip and side injured. He got on the caboose of a freight-train, intending to ride toward Boston, and when ordered off by conductor, attempted to get off and fell.

December 19. — J. W. Hull was in caboose that was being attached to train, and brake failed to hold and caboose struck train with such force as to throw Mr. Hull down against the desk, injuring his arm. He was billed free with a car of turkeys.

December 19. — H. M. Bliss, freight conductor, was pulling a pin out of an Ames drawbar and the shackle from the engine slipped and caught his hand, badly bruising it. Place of accident, Boston.

December 9. — Mrs. Delia Mackintire was thrown down while getting off passenger train 181 after train had started from Cypress Street station, and her face badly bruised.

December 19. — David Welsh, passenger brakeman, in attempting to couple engine to car, the air-pipe on the engine hit his hand and caused him to move it in such a way that his finger was caught and the end of it cut off. Place of accident, North Adams.

December 19. — P. Guhaan, coal shoveller, was walking on north main track on his way to work and was struck by passenger-train No. 324 and instantly killed. West Springfield freight yard.

December 22. — Frank Driscoll, freight brakeman, was going over train between Hinsdale and Washington, and while getting down from a house-car on to a coal-car, fell and injured his left side.

December 24. — Marie Burke, Riverside, was struck by passenger-train No. 111 while walking on the track and instantly killed. Riverside.

December 25. — Janirs Condie, freight brakeman, had one finger slightly injured while coupling engine to car at Boston.

December 28 — Mary Maloney of Southbridge jumped from train No. 334 at Worcester and fell, injuring her side.

December 28. — Michael Moore, freight brakeman, fell between the cars of his train at Chester and was run over and killed.

December 28. — Dennis Fitzgerald, coal shoveller, was struck by passenger-train No. 324 while walking on the track in West Springfield and his leg run over. Whistle was sounded.

December 28. — W. H. Waterman, freight brakeman, had his hand injured while coupling cars in West Springfield yard, by being caught between the drawbars.

December 30. — Martin Toohey, night watchman, was helping a drover unload a car of stock and was struck by the drover's pole, bruising his face. Accident occurred in West Springfield yard.

December 31. — Thomas Cornine, freight brakeman, was applying brake, and ice in the ratchet caused the brake-wheel to fly off, throwing him on the car and injuring side. Accident occurred in West Springfield yard.

Jan. 3, 1888. — Mrs. Chas. Gray was walking on the platform at Natick and as engine 115 was passing she stepped off into the side of the engine. She was struck by the side rod and thrown over the platform and her side injured.

January 4. — Mrs. H. C. Holmes was walking on the track west of Armory Street crossing, Springfield, and was struck by passenger-train No. 83 and instantly killed. She was between the tracks and attempted to cross in front of the train and the engine struck her.

January 4. — William Noble, freight brakeman, was coupling engine to car and caught his arm between casting on tender and deadwood on car, bruising the muscles. Place of accident, Warren.

Dec. 9, 1887. — W. G. Nichols, freight brakeman, was making a coupling between two cars with iron drawbars and caught his finger and slightly injured it. Place of accident, Boston.

Jan. 8, 1888. — H. R. Barlow, freight brakeman, while switching cars at Springfield freight-house the train separated, and to avoid falling between the cars Barlow jumped off the side of a car onto the ground and sprained both legs and injured his side.

January 9. — E. Smith, freight brakeman, was holding a pin to make a coupling, and when the cars came together he caught his finger back of the pin and split it about half way off. Place of accident, South Framingham.

January 9. — William Hoyle, freight brakeman, while coupling cars at Back Bay, Boston, caught two fingers between the deadwoods and badly jammed them.

January 9. — J. H. Lafferty, freight brakeman, was making a coupling and caught his fingers and badly injured them. Place of accident, Back Bay, Boston.

January 11. — Thomas E. Nolan, freight brakeman, in pulling pin had his thumb caught back of pin and badly jammed. Place of accident, Worcester yard.

January 13. — George Lunt, night watchman, while crossing the yard at East Boston slipped on a slippery rail and fell, dislocating his shoulder.

January 14. — Alfred Gorham of Augusta, Me., was struck by engine No. 119 while walking on the track near Washington Street bridge and his right leg run over.

January 19. — Michael Banks, brakeman on gravel-train, fell between the cars as train was starting from Beacon Street dump, Boston, and both his legs were run over and jammed.

January 16. — As train No. 115 was passing train No. 48 at Allston, the engine of train of No. 115 threw a broken axle safety-strap against train No. 48, and the strap after striking train No. 48 was thrown against the car window of train No. 115, breaking the glass and slightly injuring Mr. Hale of Auburndale, J. C. Chafee of Newton, F. N. Rogers of Newton and Mrs. G. F. Brown of Newtonville.

January 18. — Fred S. Veno, freight brakeman, fell between cars after pin was pulled and hurt his foot. Accident happened on switch-train in Worcester yard.

January 18. — G. Tulley, freight brakeman, jumped off engine No. 128 at Southville and sprained his ankle.

January 18. — William Munson of Springfield was stealing a ride on a freight-train near Huntington, and when getting off fell under the wheels and was run over and killed. He was intoxicated.

January 22. — F. Smith, freight brakeman, was slightly squeezed through the chest while coupling engine to car at South Framingham.

January 21. — H. Cheever, freight brakeman, had one finger broken and one bruised while pulling pin in West Springfield.

January 15. — E. H. Daniels, freight brakeman, had thumb on right hand slightly injured while coupling cars at Back Bay, Boston.

January 23. — Frank C. Kimball, freight brakeman, attempted to jump from a car on side track to car on train and fell between them, injuring his left side and hip. Accident happened at Holliston.

January 29. — Rock Shelt, laborer on snow-train, fell between the cars as train was coming out of Worcester yard, and was run over and killed.

January 31. — William Lalley of Waterbury, Conn., fell while getting off a freight-train at Warren, on which he was stealing a ride, and had his leg run over.

February 1. — George Adams of Merrimac, Mass., tried to board train No. 34 at South Framingham when it was in motion, and fell between the platform and car and was dragged ten or twelve feet, bruising his side.

February 2. — E. Ferson, freight brakeman, had finger fractured while coupling cars at East Cambridge.

February 3. — Unknown boy was struck by passenger-train No. 188 near Boston station, while walking on the track. He was not injured.

February 4. — Fred Jacobs, freight brakeman, had both hands jammed while making a chain hitch at Worcester.

February 7. — E. C. Orcutt, freight brakeman, was walking over a car to apply the brake, and slipped and fell off the car onto the ground. His back and shoulder were bruised and his forehead cut. Accident happened at Huntington.

February 15. — William Cave of Cordaville was found dead beside the south main track near Cordaville. He had evidently been struck by some train while walking on the track.

February 16. — Robert Parks, switchman at Russell, was coupling engine to car and caught his finger between the drawbars, slightly injuring it.

February 18. — A. L. Wright, freight brakeman, had index finger and thumb of left hand injured while coupling cars in West Springfield yard.

February 22. — John Roach of Springfield was moving some cars in Spring-

field freight yard, on which some of his boilers were loaded, and after moving one car on to a slight grade the car started to run back, he having failed to set the brake, and Mr. Roach attempted to stop the car by placing an iron bar under the wheels. He was thrown down and one leg run over.

February 23. — Daniel O'Brien, car inspector, was at work under a car in West Springfield yard, and another car was thrown against the one under which he was working, dragging him along on the ground and severely bruising him.

February 23. — William Nobles, freight brakeman, was struck on the head by bridge at West Warren. He was cut on the head and otherwise injured.

February 25. — F. Deno, brakeman, was letting off brake on car at Huntington and it flew off, spraining his wrist.

February 26. — Pat. Kelly (about seventeen years old) attempted to board a freight-train at Russell to steal a ride, and was unable to get on, so he let go, falling on a tie and cutting the back of his head.

February 27. — David P. Barnes, freight brakeman, was struck by Tremont Street bridge, cutting his head. Boston.

February 28. — W. P. Whittle, freight brakeman, was coupling engine 19 to car 26,035, G. T., at Warren, and his hand was caught between the drawbars and crushed. The car had a Safford drawbar.

February 28. — W. C. Soule, freight brakeman, had his hand badly injured while coupling cars at South Framingham. Car had Ames drawbar.

March 1. — William Cummings, freight brakeman, was coupling caboose to train and caught his arm between the drawbars; fleshy part of arm was bruised. Caboose had Ames drawbar; car had a Safford drawbar. Place of accident, Palmer.

March 1. — C. R. Richter of Philadelphia, Pa., was a passenger on train No. 75, and when train was one mile east of Charlton he left his seat in smoking-car and went out onto the platform and either jumped or fell off. He walked to Charlton and was not seriously injured.

March 4. — John Kirby, freight conductor, stepped in to pull pin between engine and car and caught his foot in the box that covers switch-rods; he was thrown down and his leg run over, crushing it to the thigh. Accident happened in West Springfield yard.

March 6. — Otis Pudsey, freight brakeman, had finger broken while coupling cars in Worcester.

March 8. — G. L. Young, freight brakeman, was standing between cars to couple and was struck between the shoulders by ratchet-wheel and slightly injured. Place of accident, Palmer.

March 8. — Fred Appleley, freight brakeman, had his finger jammed while coupling cars in Worcester yard. Cars had Ames drawbar and common drawbar.

March 9. — Miss Emily Smith of Chester stepped off train No. 31 at Chester, before the train stopped, and fell on the station platform, receiving a wound on the right side of her face.

March 13. — A. W. Hall (Hall Railway Signal Company) was in caboose of train No. 25, about two miles west of Millbury, and stepped off in front of the snow-plough and was struck, injuring his face.

March 16. — T. F. Leonard, freight brakeman, was injured on the face and arm, caused by snow-plough getting off the track while he was at work in it. Place of accident, Athol Junction.

March 15. — Patrick Donnellan, laborer, was in scraper-car and the car jumped the track, throwing him down and fracturing his leg. Accident happened at West Springfield.

March 12. — James Dunkin, laborer, was in scraper-car running east from Westfield, with the scraper down, and it struck the crossing two miles east of Westfield, throwing up the lever, which struck him under the chin, killing him instantly.

March 17. — John Bratton, freight brakeman, had his hand jammed while coupling cars in West Springfield yard.

March 17. — W. A. Pierce, freight brakeman, while getting on a car at West Brookfield, was knocked off by the snow at the side of the track and dragged a short distance, bruising his leg and body.

March 17. — John Mellsop, freight brakeman, and John Mannix, fireman, were injured in a collision at Newton between freight train No. 22 and passenger train No. 23. John Mellsop was thrown from top of a freight-car, fracturing his ankle. John Mannix had his teeth loosened and his head injured by cab of engine falling on him.

March 21. — E. Cooney, freight brakeman, was going over his train on Springfield grade, and, in stepping from a high car on to a lower one, he sprained his ankle.

March 22. — Dr. John Wilbur of Palmer rolled out of lower berth in sleeping-car No. 48, on train No. 49, between North Adams Junction and Pittsfield; his neck was slightly injured.

March 21. — E. Cunningham, freight brakeman, started to step from a box-car to an oil-tank car and the drawbar of the oil-tank pulled out and he fell from the car, slightly injuring his right shoulder and arm. Place of accident, Worcester yard.

March 23. — J. McCann, freight brakeman, was thrown off the car by a sudden jerk of the train, while taking on cars at Warren. His injuries were bruises side of body, forehead and left eye.

March 25. — J. R. McNally, freight brakeman, was coupling cars in West Springfield yard, and, when they struck, the pin flew up and hit him over the eye, bruising him.

March 31. — George Rochford, freight brakeman, stepped into trough that runs under the tracks and fell forward, striking his head on his lantern; he was cut over the eye. Place of accident, Springfield.

March 29. — Mrs. Dudy of Bramanville, while walking over Franklin Street bridge, Worcester, fell through on to the street and broke her wrist.

April 1. — Lawrence Fogarty of Pittsfield attempted to board a freight-train passing Hinsdale station, but lost his hold and fell between the tracks; he died in a short time of internal injuries.

April 2. — E. Murphy, freight brakeman, caught his hand between the drawbars, while switching cars in West Springfield yard, and jammed three fingers.

April 3. — T. J. Sullivan, freight brakeman, was coupling cars at Newton and caught his left hand, bruising it.

April 4. — Thomas M. Judd of Lee was struck by some passenger-cars that were being switched, while standing against the wall by the old north main track at Boston. He was dragged some distance between the cars and the wall and then fell down, wheels of car passing over him and cutting off both legs; when picked up he was dead.

April 3. — H. Bean, freight brakeman, was trying to get on caboose and

lost his hold and fell to the ground. He was bruised and shaken up. Place of accident, West Brookfield.

April 5. — J. E. Calnan, freight brakeman, was getting from caboose onto car and the step of ladder pulled out, letting him fall to the ground. His hip was injured. Place of accident, Athol Junction.

April 4. — William Lucas, freight brakeman, was coupling cars in West Springfield yard and stumbled and fell and was dragged along about ten feet. The fleshy parts of his hips were badly bruised.

April 4. — E. E. Belcher, freight conductor, caught his right arm between the deadwoods, while coupling engine to car at Westborough. Arm was bruised.

April 1. — Coleman Conley of Brighton, Mass., was a passenger on train No. 99, and, as train was coming to a stop at Cottage Farm, he fell off the steps and went down between the cars. His right arm was crushed at the shoulder.

April 6. — Charles Sanders, freight brakeman, was caught between engine and car, while coupling, and his stomach injured. Place of accident, Boston.

April 10. — Homer Walker, freight brakeman, was struck by Park Street bridge, at Boston, and his forehead bruised.

April 10. — John Ames of Cherbasco, N. Y., was struck by passenger train No. 24, while walking on the track at Rice's crossing, receiving a bad scalp wound.

April 9. — Nelson Martell, freight brakeman, had two fingers jammed while coupling cars in Worcester yard.

April 11. — M. McCarthy, freight brakeman, fell from his train at Faneuil while walking over the cars. His back and shoulders were bruised.

April 10. — M. J. Kelly, freight brakeman, fell between the cars as train was starting out of West Springfield yard, and had both legs and one arm run over. He died same day.

April 18. — Daniel Calden, freight brakeman, was letting off the brake on car and the ratchet slipped, throwing him to the ground and bruising his hip. Place of accident, Hinsdale.

April 19. — J. P. Goodrow, freight brakeman, fell from car in West Springfield yard and sprained his ankle.

April 18. — James Moran, freight brakeman, had his hand injured while coupling cars at Worcester.

April 23. — J. B. Word, freight brakeman, had small bone of arm broken while coupling cars at Worcester.

April 24. — Sam McSweeney, repairer of interlocking signals, was struck by engine No. 69 while crossing the track near tower No. 1, Boston. His face was cut and shoulder bruised.

April 25. — G. W. Cantlin of Winchester, N. H. (deaf-mute), was struck by passenger train No. 54 while walking on the track, one mile east of North Wilbraham, cutting his head very badly. Whistle was sounded and bell rung.

May 1. — T. A. Ryan, yardmaster, fell from car he was riding onto side track and injured his back and hips. Place of accident, Springfield.

May 2. — T. C. Dury, freight brakeman, had thumb broken and three fingers bruised while coupling cars in Springfield freight yard.

May 2. — Michael Murphy, teamster, was driving a two-horse team over private crossing just west of West Springfield station, and team was struck by passenger train No. 326. Murphy was thrown out and injured about the head. One horse was killed.

May 2. — George Abbott, freight brakeman, was caught between cars he was coupling and had both legs injured. Place of accident, Springfield.

April 30. — James Noonan, freight conductor, was attempting to board his train by climbing up the rear ladder of end car, and the ladder rung came off and let him fall to the ground, injuring his back and leg. Place of accident, Springfield.

May 2. — Mrs. W. H. Estey of Newtonville, Mass., attempted to cross the tracks at Newtonville while the gates were down, and, in avoiding a passing freight train, stepped in the way of passenger train No. 196 and was struck and killed.

May 4. — Thomas Moriarty, laborer, while attempting to board a moving train at South Spencer, fell under the wheels and had one leg cut off below the knee.

May 4. — James Carroll of Boston jumped off engine No. 131, on which he was riding in Boston yard, and fell and bruised his head.

May 6. — Mrs. Mary Wright was walking on the track between Brookfield and Warren, and after train No. 75 had passed her she was found to have been hit, it is supposed by the baggage-car. She died of her injuries.

May 7. — W. Frissell of Becket was struck by passenger-train No. 42, about a mile east of Becket station, and instantly killed. He came up bank of railroad and stepped directly in front of the engine.

May 6. — M. Costello was walking beside the track with an old sleeper on his shoulder, and train No. 2, which was passing, struck the sleeper and knocked Costello down. He was cut behind the ear. Place of accident, Brighton.

May 12. — Tim Hanlin, freight brakeman, was walking across the track to throw a switch and was struck by the engine and his head cut. Place of accident, Worcester.

May 15. — P. T. Feeney, freight brakeman, was struck by bridge No. 54, east of Worcester, and killed. His head was crushed.

May 18. — E. H. Daniels, freight brakeman, was struck by bridge at Newton Centre, receiving two scalp wounds.

May 19. — James Connors, 35 Wall Street, Worcester, Mass., jumped from freight train, on which he was stealing a ride, at North Grafton, and was badly cut about the head.

May 19. — Joseph Morash, freight brakeman, had finger bruised while coupling cars at South Framingham.

May 23. — A. O. Stedman, freight brakeman, was standing on the track in Grand Junction yard, East Boston, and was struck by seven coal-cars that were being switched, and thrown across the track, the cars passing over him and killing him instantly.

May 21. — F. Jordan, freight brakeman, was run over and killed at Boston. Train was roping express cars onto track where they are unloaded, and Jordan was struck by the rope and thrown under the cars.

May 25. — M. McLoughlin, freight brakeman, had hand slightly bruised while coupling cars at Westfield.

May 29. — Joseph Daly, freight brakeman, was on a car loaded with rails, and when the cars struck the rails slid by and caught Daly's foot, slightly bruising it. Place of accident, East Boston, Mass.

June 2. — George Church, freight brakeman, fell between engine and car as train was leaving stone tank east of Russell, and was run over and killed. Train separated just as he was getting from the tender to top of car, and let him fall.

June 4. — Walter Warner of Monson, Mass., was struck by passenger-train No. 19 on Tenney's crossing, east of Palmer. He was driving an ox-team and attempted to cross ahead of train. The man was thrown out and severely injured.

June 2. — Arthur Wall, freight conductor, had finger bruised while coupling cars at East Boston.

June 2. — M. Farrell, freight brakeman, had three fingers crushed while coupling cars at Westborough.

June 4. — T. E. Nolan, freight brakeman, was found dead in Worcester yard with his chest crushed. He was last seen on top of three cars that were thrown on to back track, and it is supposed that he fell while going down the end ladder, and the three cars passed over him.

June 5. — W. G. Nichols, freight brakeman, was on top of cars, and when train started he fell off and broke his right leg. Place of accident, Boston.

June 8. — Fred Marshall, freight brakeman, was climbing down side ladder of car while train was in motion and lost his hold and fell to the ground, injuring his back and head. Place of accident, West Springfield yard.

June 12. — Thomas Crowley (a boy eight years old) was jumping on freight train No. 246, while train was in motion, and fell under the wheels and had his left leg cut off below the knee. Place of accident, at Charlestown on the Grand Junction branch.

June 15. — M. Kelly was stealing a ride on a train going up Springfield grade, and when he jumped off he fell and bruised his face.

June 18. — Two unknown men were struck by passenger train No. 3 while walking on the track at Westborough. One man was instantly killed and the other badly injured. They were supposed to be tramps.

June 13. — John Ritzler, a tramp, was stealing a ride on a freight train at Westborough, and fell off the train and had his foot run over.

June 19. — R. J. Clare, freight brakeman, while standing on a box-car was struck by shafting covers which run between mill and blacksmith shop at Allston. His eye and mouth were bruised, collar-bone hurt and teeth loosened.

June 22. — James Hennessey of Grafton was trying to steal a ride on a freight-train, one mile east of Worcester, and fell between the cars and was run over and killed.

June 22. — E. Beach, freight brakeman, had his hand squeezed by being caught between two brake heads. Place of accident, Indian Orchard.

June 26. — Thomas Fitzgerald, section man, was struck by gravel-train engine, two miles east of Palmer, cutting his eye and bruising his right leg and elbow.

June 25. — R. E. Jaquith, freight brakeman, had his hand jammed while coupling engine to car at Westborough.

July 1. — John Kennedy of North Brookfield, while driving over second crossing, east of Brookfield, in a covered buggy, was struck by passenger train No. 5 and had his leg broken, and was otherwise bruised. Whistle was sounded and bell rung.

July 4. — John Hammond of Newton jumped from train No. 190, at Allston, opposite B. & A. shops, to get a friend's hat, and fell and was badly scratched.

July 5. — E. Campbell, freight brakeman, was on top of a car loaded with fish-plates, and as train was pulling off from upper end of New Fill at Westborough, car jumped the track and turned over, Campbell was thrown under the car and badly injured.

June 6. — George Fortune, freight brakeman, caught his foot between guard rail, while coupling cars, and bruised it. Place of accident, North Wilbraham.

July 5. — George Wilson of Barkerville, Mass., was struck by passenger-train No. 42, while walking on the track between Pittsfield and Shakers, and instantly killed.

July 7. — E. H. Frost, freight brakeman, when stepping from between cars he had just coupled, was struck by a stake iron on a flat-car in train passing on other track, dislocating his shoulder and fracturing his collar-bone. Place of accident, West Springfield yard.

July 7. — Unknown Italian man jumped off passenger-train 39 opposite tower No. 1, Boston, and fell, cutting him on the back of the head and over one eye.

July 7. — J. W. Houghton of Woodville, Mass., jumped from passenger-train No. 42 at Westborough station, while train was in motion, and struck on the station platform and was badly bruised about the head.

July 10. — Robert Guterey (ten-year-old boy) was struck by engine No. 146, near B. & P. crossing, Boston, and his head badly bruised.

July 12. — Frank Spaulding attempted to cross the tracks in Boston yard in front of mail car No. 58, which was being switched, and was struck by the car and knocked down.

July 12. — C. E. Robinson, freight brakeman, while making a coupling at Cottage Farm, had finger and thumb pinched.

July 15. — George Rochford, freight brakeman, was walking on the track and ran against a switch, the point of which struck him in the thigh and bruised him.

July 15. — D. Connell, freight conductor, was struck in the head by the blade of switch while standing on the steps of caboose to see if train had cleared the switch. Accident happened in Worcester yard.

July 14. — John Dilaney, Providence, R. I., attempted to cross the tracks west of Shawmut Avenue bridge, in front of passenger-train No. 145, and was struck by the engine and killed. Place of accident, Boston.

July 14. — A. J. Perry, freight brakeman, set brake on car, and, while going down the ladder, the brake flew off and threw him to the ground, bruising his left hip and arm. Place of accident, Worcester.

July 17. — Frank Rixson, repair man, was at work under some cars repairing them, and more cars were thrown onto that track, striking those Rixson was at work under, the wheels passing over his right leg in two places. Place of accident, North Adams Junction.

July 16. — W. Pierce, freight brakeman, was pulling pin that was caught, and slack of train came back and caught his hand between pin and end of car, and broke it open between the third and fourth fingers. Place of accident, Worcester yard.

July 20. — Michael Maloney of Hopkinton, while intoxicated, was lying on the track near Whitney's bridge on the Milford branch and was struck by an extra passenger-train, inflicting a slight scalp wound.

July 23. — F. W. Morse, freight brakeman, while passing over the train between Brookfield and East Brookfield, slipped and fell from the train, injuring his back and head.

July 21. — G. D. Hathorn, freight brakeman, while getting onto a freight-car at North Grafton, fell and sprained his wrist.

July 25. — George W. Aspinwall of Palmer, Mass., while driving over Tenney's crossing, east of Palmer, was struck by passenger-train No. 331 and instantly killed.

July 25. — E. A. DeVylder, freight brakeman, was run over and killed in West Springfield yard. He cut off some cars which another man rode back, and when engineer applied brake to stop train, the sudden check threw DeVylder off, as he was standing carelessly without holding onto the brake.

July 28. — Joseph Wilkinson, freight brakeman, had his fingers crushed while coupling cars in Worcester yard.

August 1. — William Conley, freight brakeman, was struck by bridge at Back Bay, Boston, while engaged in switching.

August 2. — Michael Hanley, Springfield, was crossing the track in Springfield freight-yard and was struck by a car that was being thrown onto freight-house track. He was thrown down and his right leg cut off below the knee, left leg broken and head cut.

August 3. — W. Pierce, freight brakeman, while trying to couple two dump-cars, had his hand caught and severely crushed. Place of accident, Boston.

August 3. — C. Cavanaugh, freight brakeman, was riding on front end of switching engine at Boston and lost his footing and fell off, spraining his ankle.

July 29. — Unknown man was struck by passenger-train No. 11, two miles west of Pittsfield, and instantly killed.

August 5. — E. Thayer, freight brakeman, was riding a caboose onto side track, when it jumped the track and threw him off onto the ground, severely bruising him. Place of accident, West Springfield.

August 9. — Ellen and Mary Mahar, while walking on the track on Saxonville branch, were struck by passenger train No. 40 and instantly killed.

August 7. — Fred Fenno, freight brakeman, while walking over top of train at Chester, stepped in a hole in the running-board and fell on the car, bruising his leg.

August 10. — F. E. Williams, freight brakeman, when coupling cars in West Springfield yard, caught his fingers between the drawbars.

August 14. — John Dwinnells, freight brakeman, had right hand badly jammed while coupling engine to car at Westborough.

August 13. — Joseph Sosville jumped from passenger-train No. 331 after it had started from South Spencer, and struck the signal-house and was thrown under the wheels, and had one leg cut off. He was intoxicated.

August 15. — D. Shea, freight brakeman, had one finger on right hand bruised while coupling engine to car in West Springfield yard.

August 13. — Mrs. McCarthy, car-cleaner, was at work in a car, and engine found switch wrong, but not in time to stop, and ran into the car and knocked Mrs. McCarthy down, slightly injuring her. Place of accident, Boston.

August 15. — F. A. Hall, freight brakeman, had one finger slightly bruised while coupling cars at Boston.

August 22. — Daniel Finn, freight brakeman, was switching cars at North Adams Junction and pin broke, flying up and striking him over the eye, cutting him severely.

August 18. — M. Leach, freight brakeman, while attempting to get on train at Natick, fell and slightly injured his foot by striking it against a sleeper.

August 22. — George Rochford, freight brakeman, was coupling cars and caught his finger between the deadwoods. Finger was badly bruised. Place of accident, Springfield.

August 22. — John E. Wallace, seven years old, attempted to get on freight-train at East Boston while it was in motion, and fell off. He had one toe cut off and foot badly crushed.

August 24. — James O'Brien, East Boston, was run over and killed by freight-train at East Boston. No one saw the accident, and body was found lying beside the track as train was passing.

August 20 — John Dwyer, Hinsdale, Mass., was riding on a freight-train about one mile west of Hinsdale Station, and jumped off in front of passenger-train No. 313 that was passing on the other track, and was run over and killed.

August 27. — W. C. Lowe, freight conductor, was passing from one car to another and stepped into a lantern-hole in running-board and sprained his ankle. Place of accident, Indian Orchard.

August 30. — James Stack, freight brakeman, was walking over train in Worcester yard, and thinking there was a flat-car on rear of train he stepped from a house-car onto the ground, and injured his foot and side.

August 29. — John Malley had hand caught and jammed while pulling stake from between cars at East Boston.

August 26. — Frank Bates, freight brakeman, was coupling engine to train and got caught between car and tank. He had five ribs broken and shoulder hurt. Place of accident, Natick.

August 27. — M. Banks, freight brakeman, fell between cars he was riding and injured his arm. Bunters pulled out and let cars separate. Place of accident, East Cambridge.

September 1. — L. L. Noble, freight brakeman, was applying brake on car, and brake-staff broke, throwing him to the ground, injuring his side, ankle and knee. Place of accident, Chester.

September 4. — M. Fournier, freight brakeman, while going up side ladder of car was struck by signal post at tower No. 22, South Framingham, and thrown to the ground. His side and head were bruised.

September 3. — John Maloney of Clinton fell off passenger-train No. 53 west of tower No. 6, Boston, and scratched his face. He was intoxicated.

September 4. — Philip McMahaon, freight brakeman, was run over by engine No. 180 at South Framingham. He was sent back to flag, and fell asleep on the track, and failed to hear the engine whistle.

September 5. — The dead body of John Fitzpatrick of West Brookfield was found beside the track one-fourth mile east of West Brookfield. One arm was cut off and body otherwise bruised, he having evidently been run over by some train.

September 13. — E. S. Gates, freight brakeman, had two fingers bruised while coupling cars in East Boston yard.

September 13. — Fred Appleby, freight brakeman, was struck by passenger-train No. 84 about one-half mile west of Millbury Junction, and his skull fractured.

September 17. — Simon E. Dodge, freight brakeman, went in to couple cars and caught his foot under rocker-beams of car, and before he could pull it out one wheel passed over it, cutting it off above the knee. Place of accident, Wellesley.

September 19. — Charles Voter, freight brakeman, had hand jammed while coupling engine to car in Boston yard. Car had common drawbar.

September 23. — Con. Sullivan, fourteen years old, while playing on work-train at Westfield was struck by tender and thrown under the wheels, which passed over his leg, cutting it off below the knee.

September 27. — C. M. Thrasher, freight brakeman, had finger caught between the drawbars and bruised while coupling cars at Palmer.

September 28. — Dennis Griffin, freight brakeman, was going over his train between Allston and Cottage Farm and made a misstep, and fell between the cars and was run over and instantly killed.

September 30. — D. Fay, freight brakeman, was thrown from an oil-tank car while applying brake, by engineer reversing his engine, and injured his back. Place of accident, West Brimfield.

General Information.	
Maximum weight of locomotives in working order,	60 tons.
Average weight of locomotives in working order,	35 "
Maximum weight of tenders full of fuel and water,	33 "
Average weight of tenders full of fuel and water,	25 "
Maximum weight of passenger-cars,	40½ "
Average weight of passenger-cars,	20 "
Average weight of mail and baggage-cars,	18 "
Average weight of 8-wheel box freight-cars,	9 "
Average weight of 8-wheel platform-cars,	7 tons.
Average weight of 8-wheel coal-cars,	7 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	48 feet.
Total length of heaviest engine and tender over all;	58 feet 6 in.
Number of miles of telegraph owned by company: Western Union Telegraph Company, whole line.	
Are charges for the transportation of company's supplies included in the earnings as reported for your road?	Yes.
If so, state at what rates; the number of tons carried; and the amount credited to earnings: ½ fourth-class; 149,529 tons; $108,184.11.	

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When built.
No. 49,	Lattice.	Iron.	38.50 feet.	April 28, 1888.
59,	Rolled Beam.	"	96.00 "	May 20, "
172,	Pony Truss.	"	38.00 "	April 15, "

Bridges.	
Number of trestle bridges of 25 feet length and upwards,*	9
Aggregate length of same for single track (1,530.40 feet).	
Aggregate length of same for double track (1,985.00 feet).	
Number of spans of stone bridges of 25 feet and upwards,*	12
Aggregate length of same for double track (554.75 feet).	
Number of spans of iron bridges of 25 feet and upwards,*	87
Aggregate length of same for single track (147 50 feet).	
Aggregate length of same for double track (6,157.84 feet).	
Aggregate length of same for triple track (96.00 feet).	
Aggregate length of same for quadruple track (157.25 feet).	
Aggregate length of same for quintuple track (65.50 feet).	
Number of spans of timber bridges of 25 feet and upwards,*	8
Aggregate length of same for single track (735.05 feet).	
Number of crossings of highways at grade,*	221
Number of crossings of highways over railroad,	77
Number of crossings of highways under railroad,	41
Number of highway bridges 18 feet above track,	28

* In Massachusetts, on miles road owned.

Number of highway bridges less than 18 feet above track,	49
Height of lowest bridge above the rail,	14 feet 3 in.
Number of crossings at which gates or flagman are maintained,	92
Number of crossings at which electric signals are maintained,*	4
Number of crossings at which there are neither signals nor flagmen,*	125
Number of railroad-crossings at grade (specifying each) :*	13
Boston & Providence Railroad.	
Old Colony Railroad.	
Norwich & Worcester Railroad.	
Providence & Worcester Railroad.	
Worcester Viaduct Co.	
New London Northern Railroad (Palmer).	
New London Northern Railroad (Barrett's Junction).	
New Haven & Northampton Railroad.	
Lowell & Mystic Railroad.	
Boston & Maine Railroad.	
Fitchburg Railroad.	
Eastern Railroad (two).	
Number of railroad crossings under other railroads (specifying each) :*	2
Lowell Railroad.	
Central Massachusetts Railroad.	

Rates of Fare, Etc.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	1.883 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.070 "
Average rate of fare per mile for season-ticket passengers,	.600 "
Average rate of fare per mile *received* from *all* passengers,	1.872 "
Average rate of local freight per ton per mile,	1.750 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	.770 "
Average rate of freight per ton per mile *received* from *all* freight,	1.080 "

Relating to Passengers.

Passengers to Boston (including season),	3,274,760
Passengers from Boston (including season),	3,307,439
Season-ticket passengers to and from Boston,	577,680

Capital Stock.

Capital stock authorized by charter,	$27,325.000 00	
Capital stock authorized by votes of company,	20,000,000 00	
Capital stock issued (number of shares, 200,000); amount paid in,		$20,000,000 00
Total Amount Paid in as per Books of the Co.,		20,000,000 00
Total number of stockholders,	6,904	
Number of stockholders in Massachusetts,	5,948	
Amount of stock held in Massachusetts,	$16,956,400 00	

Debt.

Funded debt, as follows : —		
Bonds due Feb. 1, 1892, rate of interest 7 per cent.,		$5,000,000 00
Interest paid on same during year,	$350,000 00	
Bonds due July 1, 1895, rate of interest 6 per cent.,		2,000,000 00
Interest paid on same during year,	$120,000 00	
Bonds due April 1, 1902, rate of interest 5 per cent.,		3,858,000 00
Interest paid on same during year,	$192,900 00	
Total Amount of Funded Debt,		$10,858,000 00

* In Massachusetts, on miles road owned.

NAME AND RESIDENCE OF OFFICERS.

William Bliss, *President*, Boston, Mass. James A. Rumrill, *Vice-President*, Springfield, Mass. Walter H. Barnes, *General Manager*, Boston, Mass. Arthur Mills, *General Traffic Manager*, Boston, Mass. Myron E. Barber, *Auditor*, Springfield, Mass. Henry T. Gallup, *General Superintendent*, Springfield, Mass. Henry B. Chapin, *General Freight Agent*, Boston, Mass. Hamilton Perkins, *Assistant General Freight Agent*, Boston, Mass. Arthur S. Hanson, *General Passenger Agent*, Boston, Mass. Charles E. Stevens, *Treasurer*, Boston, Mass. James A. Rumrill, *Clerk of Corporation*, Springfield, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

William Bliss, Boston, Mass. John Cummings, Boston, Mass. Edward L. Davis, Worcester, Mass. Jarvis N. Dunham, Pittsfield, Mass. Chauncey M. Depew, New York, N. Y. Edward B. Gillett, Westfield, Mass. Samuel Hoar, Concord, Mass. Moses Kimball, Brookline, Mass. Jacob C. Rogers, Peabody, Mass. James A. Rumrill, Springfield, Mass. Charles S. Sargent, Brookline, Mass. Mahlon D. Spaulding, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

BOSTON & ALBANY RAILROAD COMPANY,

BOSTON OR SPRINGFIELD, MASS.

WILLIAM BLISS,
C. S. SARGENT,
JOHN CUMMINGS,
JACOB C. ROGERS,
EDW. B. GILLETT,
EDWARD L. DAVIS,
J. N. DUNHAM,
MOSES KIMBALL,
SAMUEL HOAR,
J. A. RUMRILL,
Directors.
C. E. STEVENS,
Treasurer.
W. H. BARNES,
General Manager.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Oct. 24, 1888. Then personally appeared William Bliss, C. S. Sargent, John Cummings, Jacob C. Rogers, Edw. B. Gillett, Edward L. Davis, J. N. Dunham, Moses Kimball, J. A. Rumrill and Samuel Hoar, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. E. STEVENS,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Oct. 26, 1888. Then personally appeared Charles E. Stevens and W. H. Barnes, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

FRANK H. RATCLIFFE,
Justice of the Peace.

REPORT

OF THE

BOSTON & LOWELL RAILROAD CORPORATION,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[The Income and Expense accounts included in this report, aside from what this Corporation received as rental under lease to the Boston & Maine Railroad, are the operating accounts of the Boston, Concord & Montreal Railroad, which is operated by this Corporation under lease of June, 1884.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$1,970,196 40
Total expense (including taxes),		911,398 45
Net income,		1,058,797 95
Rentals:		298,500 00
Boston, Concord & Montreal Railroad,	$298,500 00	
Interest accrued during year:		371,208 95
On funded debt,	$315,680 77	
On other debt,	55,528 18	
Dividends declared (7 per cent.),		387,058 00
Balance for the year (surplus),		2,031 00
Balance at commencement of year,		656,551 95
Balance Sept. 30, 1888 (surplus),		658,582 95
ANALYSIS OF EARNINGS.		
From local passengers,		$100,244 75
through passengers (to and from other roads),		295,322 46
express and extra baggage,		18,000 00
mails,		23,630 40
Total earnings from passenger department,		437,197 61
From local freight,		108,789 58
through freight (to and from other roads),		503,597 77
Total earnings from freight department,		612,387 35
TOTAL TRANSPORTATION EARNINGS,		1,049,584 96
Rents for use of road,		765,266 95
Income from all other sources, viz.:		155,344 49
Rent of tenements, etc.,	$2,070 09	
Miscellaneous property,	17,057 35	
Boston & Maine Railroad guarantee,	134,186 05	
Accumulation to sinking fund,	2,031 00	
TOTAL INCOME FROM ALL SOURCES,		$1,970,196 40
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$18,865 90
Legal expenses,		1,199 00
Insurance,		6,332 32
Stationery and printing,		4,428 55
Outside agencies and advertising,		4,930 54

Contingencies and miscellaneous,	$32,065 51
Repairs of bridges (including culverts and cattle-guards),	27,174 32
Repairs of buildings,	25,577 32
Repairs of fences, road crossings and signs,	6,651 11
Renewal of rails,	16,413 16
[Number tons steel laid, $557\frac{980}{2240}$.]	
Renewal of ties,	31,313 91
[Number laid, 93,601.]	
Repairs of road-bed and track,	120,951 56
Repairs of locomotives,	70,715 73
Fuel for locomotives,	155,951 87
[Tons of coal, 23,915; cords of wood, 10,223.]	
Water supply,	5,738 86
Oil and waste,	11,706 65
Locomotive service,	75,048 87
Repairs of passenger-cars,	25,824 79
Passenger-train service,	26,963 39
Passenger-train supplies,	3,206 23
Mileage passenger-cars,	1,203 48
Repairs of freight-cars,	54,432 17
Freight-train service,	38,962 19
Freight-train supplies,	1,734 61
Mileage freight-cars,	26,831 27
Telegraph expenses,	9,840 66
Loss and damage, freight and baggage,	2,870 53
Loss and damage, property and cattle,	2,129 42
Personal injuries,	14,037 74
Agents and station service,	41,813 66
Station supplies,	7,478 36
TOTAL OPERATING EXPENSES,	$872,393 68
Taxes,	32,004 77
TOTAL OPERATING EXPENSES AND TAXES,	$904,398 45
Organization expenses,	7,000 00
TOTAL EXPENSES,	$911,398 45

Balance Sheet Sept. 30, 1888.

ASSETS.

Cost of road,	$6,810,901 21	
Cost of equipment,	823,837 59	
Wharves and wharf property,	1,254,036 46	
Investment in Manch. & Keene Railroad,	337,749 70	
Bedford & Billerica Railroad,	53,232 58	
Woburn Branch Extension,	290,237 24	
Double track, Middlesex Central Railroad,	70,497 90	
Improvement account, 3d track, etc.,	19,978 07	
Stocks, bonds and investments,	2,511,330 50	
TOTAL PERMANENT INVESTMENTS,		$12,171,801 25
Cash,	$70,588 12	
Bills receivable,	713,010 52	
Due from agents and companies,	664,062 21	
Sinking fund,	52,805 92	
TOTAL CASH ASSETS,		1,500,466 77
Leased equipment,		228,226 06
TOTAL ASSETS,		$13,900,494 08

Liabilities.		
Capital stock,		$5,529,400 00
Funded debt,		6,674,400 00
Unfunded debt, viz.:		799,276 14
Interest accrued not yet due,	$156,658 67	
Interest unpaid,	57,526 94	
Dividends unpaid,	2,383 50	
Notes payable,	580,000 00	
Vouchers and accounts,	2,707 03	
Profit & Loss balance,		658,582 95
Nashua & Lowell Railroad, leased equipment,		228,226 06
Improvement account,		10,608 93
Total Liabilities,		$13,900,494 08

Mileage, Traffic, etc.	
Passenger-train mileage,	485,968
Freight-train mileage,	641,961
Total Revenue-Train Mileage,	1,127,929
Switching-train mileage,	79,207
Other train mileage,	50,512
Total Train Mileage,	1,257,648
Number of local passengers (including season),	195,580
Number of through passengers (to and from other roads),	238,217
Total Number of Passengers carried,	433,797
Local passenger mileage (local passengers carried one mile),	2,789,889
Through passenger mileage (through passengers carried one mile),	10,998,341
Total Passenger Mileage,	13,788,230
Number tons local freight,	148,593
Number tons through freight (to and from other roads),	601,814
Total Number Tons Freight carried,	750,407
Local freight mileage (tons local freight carried one mile),	5,111,406
Through freight mileage (tons through freight carried one mile),	42,418,665
Total Freight Mileage,	47,530,071
Average number of persons employed,	940

Description of Road.	
Main line of road from Boston to Lowell,	26.75 miles.
Main line of road in Massachusetts,	26.75 "
Double track on main line,	26.75 "
Same in Massachusetts,	26.75 "
Branches owned by company, viz.:	
Mystic,	2 25 "
Lexington & Arlington,	9.25 "
Stoneham,	2.50 "
Woburn,	6.20 "
Lawrence Branch,	3.21 "
Salem & Lowell,	16.80 "
Lowell & Lawrence,	12.42 "
Middlesex Central,	11.08 "
Bedford & Billerica,	7.63 "
Total length of branches owned by company,	71.34 "
Total length of branches owned by company in Massachusetts,	71.34 "
Double track on branches,	15.45 "
Same in Massachusetts,	15.45 "

Total road belonging to this company,	98.09 miles.
Sidings and other tracks not above enumerated,	63.92 "
Same in Massachusetts,	63.92 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	204.21 "
Same in Massachusetts,	204.21 "
Total length of steel rails in tracks, not including steel-top rails,	120.50 "
[Weights per yard, 60 to 72 pounds.]	
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Boston, Concord & Montreal Railroad, length,	187.26 miles.
Total length of above road,	187.26 "
Total length of above road in other States (specifying each):	
New Hampshire,	187.26 "
Total miles of road operated by this company,	187.26 "
Number of stations on all *roads owned* by this company,	72
Same in Massachusetts,	72
EQUIPMENT.	
Number of locomotives, leased,	37
Number of passenger-cars, leased,	26
Number of parlor or sleeping cars, leased,	5
Number of baggage, mail and express cars, leased,	24
Number of freight-cars (basis of 8 wheels), leased,	918
BRIDGES.	
Number of trestle bridges of 25 feet length and upwards,	3
Aggregate length of same for single track (242 feet).	
Aggregate length of same for triple track (1,831 feet).	
Aggregate length of same for quadruple track (1,436 feet).	
Number of spans of stone bridges of 25 feet and upwards,	9
Aggregate length of same for double track (312 feet).	
Aggregate length of same for quadruple track (35 feet).	
Number of spans of iron bridges of 25 feet and upwards,	24
Aggregate length of same for single track (266 feet).	
Aggregate length of same for double track (1,270 feet).	
Aggregate length of same for triple track (137 feet).	
Aggregate length of same for quadruple track (193 feet).	
Aggregate length of same for quintuple track (85 feet).	
Number of spans of timber bridges of 25 feet and upwards,	15
Aggregate length of same for single track (403 feet).	
Aggregate length of same for double track (97 feet).	
Number of crossings of highways at grade,	101
Number of crossings of highways over railroad,	58
Number of crossings of highways under railroad,	8
Number of highway bridges 18 feet above track,	6
Number of highway bridges less than 18 feet above track,	52
Height of lowest bridge above the rail,	15 feet 6 in.
Number of crossings at which gates or flagmen are maintained,	73
Number of crossings at which electric signals are maintained,	23
Number of crossings at which there are neither signals nor flagmen,	28
Number of railroad crossings at grade (specifying each):	5
Three on Mystic Branch, crossing the Eastern, Boston & Maine and Boston & Albany Railroads.	
Two on Salem & Lowell, crossing Boston & Maine and Danvers Railroads.	
Number of railroad crossings over other railroads (specifying each):	1
Fitchburg Railroad.	

Number of railroad crossings under other railroads (specifying each):	2
Both under the Lowell & Andover Railroad.	

RATES OF FARE, ETC.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	3.59 cents.
Average rate of fare per mile *received* from passengers to and from other roads, ...	2.69 "
Average rate of fare per mile *received* from *all* passengers, .	2.87 "
Average rate of local freight per ton per mile, . . .	2.11 "
Average rate of freight per ton per mile *received* from freight to and from other roads, ...	1.18 "
Average rate of freight per ton per mile *received* from *all* freight, ...	1.28 "

CAPITAL STOCK.

Capital stock authorized by charter (not given).	
Capital stock authorized by votes of company, $5,529,400 00	
Capital stock issued (number of shares, 55,294); amount paid in, ...	$5,529,400 00
TOTAL AMOUNT PAID IN AS PER BOOKS OF THE CO., .	5,529,400 00
Total number of stockholders, ... 1,506	
Number of stockholders in Massachusetts, . . 1,299	
Amount of stock held in Massachusetts, . . $4,927,500	

DEBT.

Funded debt, as follows: —		
Bonds due April 1, 1892, rate of interest 7 per cent., . .		$999,500 00
Interest paid on same during year, . .	$69,965 00	
Bonds due March 1, 1895, rate of interest 7 per cent., .		500,000 00
Interest paid on same during year, . .	$35,000 00	
Bonds due July 1, 1896, rate of interest 6 per cent., . .		750,000 00
Interest paid on same during year, . .	$45,000 00	
Bonds of Lowell & Lawrence Railroad, due Oct. 1, 1897, rate of interest 6 per cent., ...		200,000 00
Interest paid on same during year, . .	$12,000 00	
Bonds of Salem & Lowell Railroad, due Oct. 1, 1898, rate of interest 6 per cent., ...		226,900 00
Interest paid on same during year, . .	$13,614 00	
Bonds due July 1, 1899, rate of interest 5 per cent., . .		620,000 00
Interest paid on same during year, . .	$31,000 00	
Bonds due May 1, 1903, rate of interest 4½ per cent., . .		250,000 00
Interest paid on same during year, . .	$11,250 00	
Bonds due Sept. 1, 1905, rate of interest 4 per cent., . .		500,000 00
Interest paid on same during year, . .	$20,000 00	
Bonds due Nov. 1, 1906, rate of interest 4 per cent., . .		500,000 00
Interest paid on same during year, . .	$20,000 00	
Bonds due June 1, 1907, rate of interest 4 per cent., . .		1,503,000 00
Interest paid on same during year, . .	$44,851 77	
Bonds due July 1, 1907, rate of interest 4 per cent., . .		325,000 00
Interest paid on same during year, . .	$13,000 00	
Bonds of Nashua & Lowell Railroad, ...		300,000 00
Interest paid on same during year, . .	$17,000 00	
		$6,674,400 00

NAME AND RESIDENCE OF OFFICERS.

T. Jefferson Coolidge, *President*, Manchester, Mass. C. E. A. Bartlett, *General Manager*, Chelmsford, Mass. Myron Taylor, *Auditor*, Arlington, Mass. Chas. E. A. Bartlett, *Treasurer and Clerk of Corporation*, Chelmsford, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

T. Jefferson Coolidge, Manchester, Mass. Edwin Morey, Boston, Mass. Frederick E. Clarke, Lawrence, Mass. Wm. Powell Mason, Boston, Mass. A. Cochrane, Boston, Mass. Wm. A. Haskell, Boston, Mass. F. L. Higginson, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

BOSTON & LOWELL RAILROAD CORPORATION,
BOSTON, MASS.

T. JEFFERSON COOLIDGE,
EDWIN MOREY,
FREDERICK E. CLARKE,
F. L. HIGGINSON,
W. POWELL MASON,
Directors.
C. E. A. BARTLETT,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Dec. 7, 1888. Then personally appeared the above-named T. Jefferson Coolidge, Edwin Morey, Frederick E. Clarke, F. L. Higginson, W. Powell Mason, C. E. A. Bartlett, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. E. CRAM,
Justice of the Peace.

REPORT

OF THE

BOSTON & MAINE RAILROAD,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$13,110,798 14
Total expense (including taxes),		9,253,543 53
Net income,		3,857,254 59
Rentals:		2,862,901 84
Eastern Railroad,	$871,452 75	
Worcester, Nashua & Rochester Railroad,	250,000 00	
Portland, Saco & Portsmouth Railroad,	90,300 00	
Portsmouth, Great Falls & Conway Railroad,	45,250 00	
Portsmouth & Dover Railroad,	46,140 00	
Lowell & Andover Railroad,	52,500 00	
Dover & Winnipiseogee Railroad,	29,000 00	
Eastern Railroad in New Hampshire,	22,500 00	
Manchester & Lawrence Railroad,	102,500 00	
Newburyport City Railroad,	6,000 00	
West Amesbury Branch Railroad,	5,700 00	
Wolfborough Railroad,	2,240 00	
Kennebunk & Kennebunkport Railroad,	2,925 00	
Boston & Lowell Railroad,	655,266 95	
Nashua & Lowell Railroad,	73,000 00	
Stony Brook Railroad,	20,000 00	
Wilton Railroad,	16,950 00	
Peterborough Railroad,	35,699 64	
Central Massachusetts Railroad,	101,500 00	
Connecticut & Passumpsic Rivers Railroad,	233,000 00	
Massawippi Valley Railway,	44,000 00	
Sundry track rentals,	7,037 50	
	$2,712,961 84	
Northern Railroad, operated under contract (9 months),	149,940 00	
Interest accrued during year:		375,863 41
On funded debt,	$328,460 00	
On other debt,	47,403 41	
Dividends declared (10 per cent.):		700,000 00
5 per cent. declared payable Nov. 15, 1887; 5 per cent. declared payable May 15, 1888.		
Balance for the year (deficit),		81,510 66
Balance at commencement of year,	$1,799,001 14	
Add: Increase in valuation of Portland & Rochester Railroad stock to par,	60,459 44	
Balance at commencement of year, as so changed,		1,859,460 58
Balance Sept. 30, 1888 (surplus),		1,777,949 92

ANALYSIS OF EARNINGS.		
From local passengers,		$5,393,048 46
through passengers (to and from other roads),		1,096,516 08
express and extra baggage,		377,831 42
mails,		156,553 50
Total earnings from passenger department,		7,023,949 46
From local freight,		3,434,942 39
through freight (to and from other roads),		2,265,626 42
Total earnings from freight department,		5,700,568 81
TOTAL TRANSPORTATION EARNINGS,		12,724,518 27
Rents for use of road,		11,269 62
Income from all other sources, viz.:		375,010 24
Rents of tenements, lands, etc.,	$144,011 49	
Income from investments,	164,637 98	
Income from coal-hoisting engines,	5,720 39	
Miscellaneous,	60,640 38	
TOTAL INCOME FROM ALL SOURCES,		$13,110,798 13
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$193,658 53
Legal expenses,		60,655 67
Insurance,		29,717 89
Stationery and printing,		59,704 22
Outside agencies and advertising,		43,680 11
Contingencies and miscellaneous,		99,265 92
Repairs of bridges (including culverts and cattle-guards),		373,283 96
Repairs of buildings,		347,325 94
Repairs of fences, road crossings and signs,		58,119 68
Renewal of rails,		176,823 44
[Number tons new steel laid, 11,830; old steel, 4,890; total, 16,720.]		
[Number tons old iron laid, 562.]		
Renewal of ties,		200,852 99
[Number laid, 577,642.]		
Repairs of road-bed and track,		995,419 88
Repairs of locomotives,		443,191 68
Fuel for locomotives,		1,019,178 53
[Tons of coal, 238,385; cords of wood, 15,254.]		
Water supply,		80,442 55
Oil and waste,		45,887 26
Locomotive service,		703,113 36
Repairs of passenger-cars,		457,890 84
Passenger-train service,		371,929 78
Passenger-train supplies,		75,631 23
Mileage passenger-cars,		13,049 36
Repairs of freight-cars,		406,521 49
Freight-train service,		443,231 82
Freight-train supplies,		17,574 14
Mileage freight-cars,		117,792 90
Telegraph expenses,		98,290 66
Loss and damage, freight and baggage,		14,629 27
Loss and damage, property and cattle,		12,834 10
Personal injuries,		205,134 53
Agents and station service,		1,252,973 12
Station supplies,		203,540 23
TOTAL OPERATING EXPENSES,		$8,621,345 08
Taxes,		632,198 46
TOTAL OPERATING EXPENSES AND TAXES,		$9,253,543 54

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Other expenditures charged to property account,		$206,713 24
3,952 4-10 shares Portland & Ogdensburg Railroad stock,	$146,238 80	
Increase in valuation of 3,000 shares of Portland & Rochester Railroad stock to par,	60,459 44	
5 shares Danvers Railroad stock,	15 00	
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		$206,713 24

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$9,620,937 63	
Cost of equipment,	1,308,180 00	
Lands in Dover and Old Orchard,	14,132 21	
Lands in Portland,	16,467 50	
Lands in Saco,	15,000 00	
Lands in Somerville,	5,850 00	
Stock of Dover & Winnipiseogee Railroad,	263,144 48	
Stock of Portland & Rochester Railroad,	300,000 00	
Stock of Portland & Ogdensburg Railroad,	146,238 80	
Stock and bonds of Newburyport Railroad,	302,493 95	
Stock and account of Danvers Railroad,	27,445 00	
Stock of Orchard Beach Railroad,	49,624 89	
Bonds of Danvers Railroad,	125,000 00	
Steamer Mt. Washington and wharves,	69,260 24	
TOTAL PERMANENT INVESTMENTS,		$12,263,774 70
Cash,	$161,749 00	
Bills receivable,	210,715 74	
Due from agents and companies,	1,462,083 05	
Materials and supplies,	1,495,524 22	
Sinking fund,	128,075 29	
Debit balances,	563,174 60	
Improvement accounts,	3,283,347 37	
TOTAL CASH ASSETS,		7,304,669 27
TOTAL ASSETS,		$19,568,443 97
LIABILITIES.		
Capital stock,		$7,000,000 00
Funded debt,		5,673,000 00
Unfunded debt, viz.:		4,989,418 76
Interest accrued, not due,	$75,736 66	
Interest unpaid, uncalled for,	8,875 00	
Rent of other roads, accrued, unpaid,	375,800 38	
Dividends unpaid,	18,891 00	
Connecticut & Passumpsic Rivers Railroad, lease account,	136,927 63	
Notes payable,	2,278,000 00	
Eastern Railroad, lease account,	170,240 33	
Boston & Lowell Railroad, lease account,	84,987 71	
Vouchers and accounts,	1,839,960 05	
Profit & Loss balance,		1,777,949 92
Improvement account fund,		128,075 29
TOTAL LIABILITIES,		$19,568,443 97

Mileage, Traffic, etc.	
Passenger-train mileage,	5,618,402
Freight-train mileage,	3,024,807
Total Revenue-Train Mileage,	8,643,209
Switching-train mileage,	1,663,742
Other train mileage,	333,232
Total Train Mileage,	10,640,183
Number of season-ticket passengers,	2,380,944
Number of local passengers (including season),	25,586,971
Number of through passengers (to and from other roads),	1,052,550
Total Number of Passengers carried,	26,639,521
Local passenger mileage (local passengers carried one mile),	278,921,490
Through passenger mileage (through passengers carried one mile),	56,180,693
Total Passenger Mileage,	335,102,183
Number tons local freight,	3,284,694
Number tons through freight (to and from other roads),	2,785,136
Total Number Tons Freight carried,	6,069,830
Local freight mileage (tons local freight carried one mile),	119,616,975
Through freight mileage (tons through freight carried one mile),	171,942,772
Total Freight Mileage,	291,559,747
Average weight of passenger-trains (exclusive of passengers),	152 tons.
Average number of cars in passenger-trains,	5
Average weight of freight-trains (exclusive of freight),	233 tons.
Average number of cars in freight-train,	23
Average number of persons employed,	8,919

Description of Road.	
Main line of road from Boston, Mass., to Portland, Me.,	115.50 miles.
Main line of road in Massachusetts,	36.75 "
Main line of road in New Hampshire,	34.75 "
Main line of road in Maine,	44.00 "
Double track on main line,	70.96 "
Same in Massachusetts,	36.25 "
Branches owned by company, viz.:	
Medford (single track),	2.00 "
Methuen (2.75 miles single; 1 mile double),	3.75 "
Great Falls (single track),	2.75 "
Total length of branches owned by company,	8.50 "
Total length of branches owned by company in Massachusetts,	5.75 "
Total length of branches owned by company in New Hampshire,	2.75 "
Double track on branches,	1.00 "
Same in Massachusetts,	1.00 "
Total road belonging to this company,	124.00 "
Sidings and other tracks not above enumerated,	101.466 "
Same in Massachusetts,	55.707 "
Total Length of Track, computed as Single Track,	297.426 "
Same in Massachusetts,	135.457 "
Total length of steel rails in tracks, not including steel-top rails,	220.321 "
[Weights per yard, 60 and 72 pounds.]	

Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Eastern Railroad of Mass. and branches, length,	118.840 miles.
Worcester, Nashua & Rochester Railroad, length,	94.480 "
Eastern Railroad in New Hampshire, length,	16.080 "
Portland, Saco & Portsmouth Railroad, length,	50.760 "
Portsmouth, Gt. Falls & Conway Railroad, length,	72.860 "

Wolfborough Railroad, length,	12.030 miles.
Chelsea Beach Railroad, length,	1.780 "
Newburyport City Railroad, length,	2.240 "
Portsmouth & Dover Railroad, length,	10.880 "
Danvers Railroad, length,	9.259 "
Newburyport Railroad, length,	26.979 "
Lowell & Andover Railroad, length,	8.730 "
West Amesbury Branch Railroad, length,	4.500 "
Dover & Winnipiseogee Railroad, length,	29.000 "
Manchester & Lawrence Railroad, length,	22.390 "
Kennebunk & Kennebunkport Railroad, length,	4.500 "
Boston & Lowell Railroad and branches, length,	98 090 "
Nashua & Lowell Railroad, length,	14 500 "
Stony Brook Railroad, length,	13.160 "
Wilton Railroad, length,	15.500 "
Peterborough Railroad, length,	10.500 "
Manchester & Keene Railroad, operated jointly with Concord Railroad, length,	29.590 "
Central Massachusetts Railroad, length,	98.770 "
Connecticut & Passumpsic Rivers Railroad, length,	110.300 "
Massawippi Valley Railway, length,	36.750 "
Northern and Concord & Claremont Railroads, length,	172 320 "
Total length of above roads,	1,084.788 "
Total length of above roads in Massachusetts,	428.808 "
Total length of roads in other States (specifying each),	655.980 "
Eastern Railroad in New Hampshire, length,	16.080 "
Worcester, Nashua & Rochester Railroad in N. H., length,	55.020 "
Portsmouth, Gt. Falls & Conway Railroad in N. H., length,	69.940 "
Wolfborough Railroad in New Hampshire, length,	12.030 "
Portsmouth & Dover Railroad in New Hampshire, length,	10.880 "
West Amesbury Branch Railroad in New Hampshire, length,	2 250 "
Manchester & Lawrence Railroad in New Hampshire, length,	22.390 "
Dover & Winnipiseogee Railroad in New Hampshire, length,	29.000 "
Nashua & Lowell Railroad in New Hampshire, length,	5.250 "
Wilton Railroad in New Hampshire, length,	15 500 "
Peterborough Railroad in New Hampshire, length,	10 500 "
Manchester & Keene Railroad in New Hampshire, length,	29.590 "
Northern and Concord & Claremont Railroads in N. H., length,	172.320 "
Portland, Saco & Portsmouth Railroad in Maine, length,	50.760 "
Kennebunk & Kennebunkport Railroad in Maine, length,	4.500 "
Portsmouth, Gt. Falls & Conway Railroad in Maine, length,	2 920 "
Connecticut & Passumpsic Rivers R. R. in Vermont, length,	110 300 "
Massawippi Valley Railway in Canada, length,	36.750 "
Total length of above roads,	1,084.788 "
Total length of above roads in Massachusetts,	428.808 "
Total length of above roads in other States (specifying each),	655.980 "
New Hampshire, length,	450 750 "
Maine, length,	58.180 "
Vermont, length,	110.300 "
Canada, length,	36.750 "
Total miles of road operated by this company,	1,208.788 "
Total miles of road operated by this company in Massachusetts,	465.558 "
Number of stations in Massachusetts on all *roads operated* by this company,	266
Number of telegraph offices in same,	128
Number of stations on all *roads owned* by this company,	63
Same in Massachusetts,	30
EQUIPMENT.	
Number of locomotives (leased, 298; owned, 123),	421
Number of passenger-cars (leased, 363; owned, 214),	577
Number of parlor or sleeping cars (leased, 11; owned, 12),	23

Number of baggage, mail and express cars (leased, 147; owned, 42),	189
Number of freight-cars (basis of 8 wheels) (leased, 5,958½; owned, 2,343),	8,301½
Number of other cars (leased, 295; owned, 109),	404
Snow-ploughs (leased, 34; owned, 16),	50

List of Accidents.

	From Causes beyond their own Control (in Massachusetts).		From their own Misconduct or Carelessness (in Massachusetts).		Total in Massachusetts.		Total on Whole Road Operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	10	53	3	15	13	68	16	68
Employees,	3	16	9	68	12	84	18	105
Others,	1	-	48	45	49	45	57	47

Statement of each Accident in Massachusetts for the Year ending Sept. 30, 1888, as reported to the Railroad Commissioners.

Western, Eastern, Northern, and Worcester, Nashua & Portland Divisions.

Oct. 1, 1887. — John Carr, in an apparently intoxicated condition, stepped or fell off the station platform at Prison Point, in front of a passing train, and was killed.

October 1. — Jerry Corcoran, a freight conductor, in attempting to couple his caboose to train near Worcester, was caught, bruising his legs.

October 3. — J. C. Foss, a fireman, engaged in cleaning whistle bell of his engine in Salem yard, was severely scalded in neck and face by the valve blowing off.

October 3. — Albert E. Barnes fell from the step of a car in Salem that was being set off, under the wheels, and had his left leg crushed. He was a brakeman.

October 4. — John Howell was caught between the gate and fence on the sidewalk on Causeway Street, Boston, and crushed so that he soon afterwards died.

October 5. — Warren Fitch, a brakeman, in attempting to couple cars to an engine near Gloucester, was caught, and had his leg jammed.

October 5. — Dennis Sullivan, section hand, caught his foot and had it bruised by the wheel of a car being pushed off the main track at Worcester.

October 8. — Fred H. Webster, a trespasser, sitting on the rail near Everett station, was struck by a passing train and severely injured.

October 11. — Thomas E. Brown, a trespasser, attempting to board a train after it had started from Wakefield Centre station, fell under the wheels, and had three toes crushed.

October 11. — Samuel Mill, a passenger, attempting to alight from a train at Bell Rock station before it had come to a full stop, fell, and was caught by his clothing and dragged some distance, breaking one rib and bruising him severely.

October 17. — Joseph Foley, a boy of seven years, a trespasser, playing about the cars in Boston yard, fell under the wheels of one that was being shifted, and had his arm cut off.

October 17. — David Keefe, a boy of thirteen, a trespasser, attempting to cross the tracks in front of a moving engine near Gloucester station, was run over and killed.

October 18. — Henry Whittecund, a passenger, jumped or fell from an outward bound train after it had passed Prison Point station, and was picked up in the "dump pit" with fingers of the left hand cut off and left leg fractured below the knee.

October 24. — James Riley, a trespasser, walking on the tracks on the bridge over the Concord River at Lowell, was struck by a passing train and killed.

October 24. — Edward Noyes, a trespasser, attempting to board a train while it was in motion, near Salem station, fell, and had his great toe crushed.

October 25. — John McCormick, a trespasser, was found near Lynn Common station shortly after the passage of train No. 73, with two fingers cut off, and ankle broken and head injured.

October 28. — Thomas J. Duffy, a passenger, jumped off while the train was passing Market Street crossing in Lynn, and fell, spraining his wrist and receiving a severe shock to his system.

November 2. — J. E. Griffen, a yardman, attempting to couple freight-cars in the Lincoln Square yard in Worcester, was caught, and had his hand jammed and finger broken.

November 7. — James Hammond, a brakeman, in attempting to couple snow-plough to a freight-car near Salem station, was caught, and had two bones in his foot broken.

November 8. — Dennis Shea, a draw tender, was struck by an engine near Prison Point station, Boston, and killed.

November 10. — John Condon, a trespasser, attempting to cross the tracks in the passenger station, Haymarket Square, Boston, in front of a moving train, fell under the wheels, and was run over and killed.

November 17. — Mrs. Laddlier was found a few feet from Andover Street crossing, near Ballardvale station, shortly after the passage of train No. 122, with right leg cut and bone shattered.

November 19. — Joseph King, probably a trespasser, was found lying, with leg cut off, near the edge of the outer platform at Lynn station. He is supposed to have attempted to board train No. 91 while it was in motion.

November 20. — Martin Finley, a trespasser, in attempting to assist a passenger onto a train after it had started from the Lowell station, fell under the wheels, and had both legs crushed.

November 21. — Daniel O'Sullivan, a trespasser, attempting to cross the tracks at Adams Street crossing, near Edgeworth station, in front of an approaching train, was struck and killed.

November 21. — Michael J. Regan, a trespasser, was found in a mutilated condition, and dead, on the tracks near Somerville, probably killed by a passing train.

November 24. — John Chipman, a brakeman, attempting to couple cars in the Lincoln Square yard, Worcester, was caught and jammed, losing a finger.

November 24. — H. Redding, a passenger, jumped from a moving train at a point about a hundred feet east of Wakefield station, and fell on the platform, cutting his scalp so that it had to be sewed up.

November 24. — Cornelius Doyle, a section hand, sitting on the coal track near Newburyport station, was run over and killed by cars that were being set off from the main track.

November 28. — Joseph Blazsenak, a passenger, lost his hat, and, not waiting for the train to stop, jumped off before it reached Charlestown station, and fell, cutting his head and hand slightly.

December 1. — Fred Bowen, a brakeman, attempting to couple cars in the Boston yard, was caught, and had his back and arm injured.

December 3. — Henry Brown, a passenger, standing on the lower step of a car in a train while in motion, and before it had stopped at East Saugus station, slipped and fell under the wheels, and was killed.

December 3. — Ernest Connelly, probably a passenger on train No. 94, was found near the track between Andover and Ballardvale stations, badly bruised. He was intoxicated, and no doubt fell off the train.

December 3. — John S. Evitts, a brakeman, in attempting to couple cars near Peabody station, was caught, and lost a finger of the right hand.

December 3. — L. D. Frazier, a brakeman, fell from the top of his car in the Boston yard, under the wheels, and had one foot crushed.

December 8. — Frank E. Chickering, a brakeman, riding in a train, jumped or fell as it was passing Prison Point station, and the wheels passed over both feet, cutting off one toe and crushing others.

December 8. — Peter Cassidy, a trespasser, attempting to cross the tracks in front of a moving train after it had started from Charlestown station, was struck, receiving a severe scalp wound.

December 8. — Fred Feener, a passenger, jumped from a moving train after it had started from Wyoming station, and was struck by a passing inward-bound train, receiving injuries in the head.

December 8. — Patrick J. McCarty, a brakeman, in attempting to couple cars in North Lawrence yard, was caught, and had a finger and thumb crushed.

December 9. — John Callahan, a brakeman, coupling cars in North Lawrence yard, was caught, and had a finger crushed and two others badly jammed.

December 19. — Worthen S. Evans, a brakeman, in coupling cars near Revere station, was caught, and had his arm jammed.

December 19. — Mrs. Sarah Jones, a colored woman, stepped in front of a moving train near Somerville station, and was struck by the engine and run over, receiving injuries of which she soon afterwards died. She was supposed to be intoxicated.

December 21. — George Belanger, a trespasser, walking on the tracks in Lynn, was struck by a passing train, receiving injuries from which he soon afterwards died.

December 23. — Edward F. Carr, a brakeman, coupling cars in Salem yard, was caught, and had his shoulders badly bruised.

December 27. — James Powers, a brakeman, uncoupling cars in Lowell yard, was caught and jammed so badly as to cause his death a short time afterwards.

Jan. 2, 1888. — John E. Waldron, a brakeman, in coupling cars in the Charlestown yard, was caught, and had his arm broken.

January 3. — Otto Magnusson, a trespasser, walking on the tracks near Rowley station, was struck by a passing train and killed.

January 9. — Ellen Sheahan, attempting to cross the tracks at the Green Street crossing in front of an engine that was backing down, was struck, and had her hip broken.

January 10. — Train No. 53 was derailed near the Bradford station by the breaking of the flange of the leading wheel under the smoking-car. Four cars left the track, consisting of one smoking-car and three passenger-cars. One of the passenger-cars came in contact with an iron water-tank near the track, throwing it down from its supports upon one of the derailed cars. Fourteen persons were killed or died on account of injuries received, and fifty-two other persons were injured or claimed to have been injured.

January 12. — Tim Sullivan, a trespasser, walking on the tracks on the Mystic River bridge, was struck by a passing train and knocked into the river, and rescued, apparently not seriously injured.

January 16. — John Porter, a trespasser, attempting to cross the tracks at Federal Street crossing in Beverly, by creeping under the closed gates, was struck by a passing train, receiving injuries to his hip, head and arm.

January 23. — Dennis L. Buckley, a brakeman, coupling cars in Salem yard, was caught, and had his right arm badly bruised.

January 27. — Frank Ross, a passenger in a moving train, while crossing from one car to another near Beverly bridge, fell off, sustaining injuries about the head.

January 30. — Amos Merrow, a trespasser, attempting to board a train after it had started from Lowell station, fell, sustaining severe bruises to his face, hands and head.

January 30. — Frank E. Tilton, a brakeman, in stepping from the tender of engine to the head car while the train was in motion, was thrown to the ground, on account of the link between the tender and car breaking, near Lynnfield Centre, sustaining bruises to his chest and leg.

February 3. — J. E. Hastings, attempting to cross the tracks at Lincoln Square crossing, Worcester, was struck by a passing engine, receiving injuries from which he soon afterwards died.

February 11. — James Roberts, a watchman, attempting to cross the tracks near Draw No. 2 in Boston yard, in front of a moving engine, was struck, receiving injuries from which he soon afterwards died.

February 13. — James R. Lynch, a trespasser, walking on the tracks near Everett station, was struck by a passing train and killed.

February 20. — Henry P. Evitts, a brakeman, attempting to uncouple cars in the Salem yard while they were in motion, fell under the wheels, and was run over and killed.

February 22. — William Mullen, a trespasser, apparently under the influence of liquor, attempting to board a train in the Boston passenger station in Haymarket Square while it was in motion and after it had started, fell under the wheels, receiving injuries from which he soon afterwards died.

February 24. — Angus McLeod, a brakeman, was struck by overhead bridge near South Lawrence, and thrown from the top of his car, receiving injuries to his head and back.

March 2. — James Smith, a brakeman, coupling cars in Charlestown yard, was caught, and had his hand crushed.

March 17. — James Callahan, a trespasser, walking on the tracks near Salem station, was struck by a passing train and killed.

March 17. — Thomas J. Tryne, a brakeman, in coupling cars in Lincoln Square yard, Worcester, slipped, and had his leg caught and broken.

March 17. — A. Nelson, a brakeman, in arranging switch in Lincoln yard, Worcester, was struck by a passing train, receiving injuries from which he soon afterwards died.

March 26. — William McGurr, a trespasser, attempting to board a train as it was passing Washington Street crossing in Salem, fell under the wheels, and had three fingers of his right hand cut off.

March 27. — John H. Teague, a brakeman, coupling cars in Salem yard, was caught, and had his left hand badly jammed and lost one finger.

April 10. — John McKenna, a trespasser, attempting to cross the tracks in front of a moving train at Lynn station, was struck and thrown against the station wall, and had his skull fractured.

April 21. — Richard Welch, an employee, coupling cars in the East Boston yard, was caught, and had the fleshy part of his arm jammed.

April 21. — Edward Sprague, an employee, uncoupling cars in East Boston yard, was caught, and had his hand badly jammed.

April 27. — George York, a trespasser, walking on the tracks near Malden station, was struck by a passing train and killed.

April 28. — William Welch and John T. Goodwin, trespassers, walking on the tracks in the freight yard in Lynn, were struck by a freight train. Goodwin was killed, and Welch lost three toes on one foot. Both were intoxicated.

April 28. — Patrick Martin, a passenger, jumped from the cars after the train had started from Cliftondale station, and received injuries to his face and knee.

May 8. — An unknown man, attempting to cross the tracks at Travers Street crossing, Boston, in front of cars that were being backed into the station, was knocked down, run over and killed.

May 9. — Isaac Russell, a trespasser, walking on the tracks near East Everett station, was struck by a passing train, receiving injuries from which he soon afterwards died.

May 14. — James K. Pierce, a trespasser, was found in an unconscious state on top of a box-car near Beverly station, with scalp wound and cut over the eye; supposed to have come in collision with some overhead bridge.

May 24. — Peter Newport, a passenger, jumped from a train while it was in motion and entering Salem station, and fell under the wheels and had part of his foot cut off.

May 28. — A. J. Ricker, a trespasser, attempting to cross the tracks in front of a moving train in Lynn station, was struck, receiving injuries of which he soon afterwards died.

May 30. — Mrs. Sullivan, a trespasser, walking on the tracks near Revere station, was struck by a passing train and thrown into the ditch, sustaining slight injuries to her arm and shoulder.

June 3. — John Haggerty and P. Kennedy, employees, in separating engines that had collided, at Reading station, were injured by the overturning of the derrick car by the unexpected starting of one of the engines down grade. Haggerty had an arm broken, and Kennedy was injured in the side and back.

June 4. — A. M. Law, a passenger in train No. 77, at Boston station, Haymarket Square, was injured in the knee and had his head forced through a pane of glass in the car in which he was sitting, caused by an engine backing down on the car with considerable force, on account of a misplaced switch.

June 5. — Henry S. Marden, a fireman, attempting to cross the tracks in front of a moving train near Somerville station, slipped and fell, and was struck by the engine, sustaining a fracture of the leg and other injuries.

June 6. — Alfred Legendro, a section hand, was struck by a passing train near North Andover, and had his left arm nearly severed from his body, and received other bruises about the breast.

June 24. — William O'Brien, a passenger, jumped off a moving train before it had come to a stop, at Magnolia station, and fell upon his face, injuring his nose and forehead.

June 25. — J. Stafford, a trespasser, an escaped lunatic from the McLean Asylum, threw himself in front of the engine of a passing train near Revere, and was struck and killed.

July 3. — Malcolm Cambell, the driver of a team of lumber, got his team stalled on Austin Street crossing, Charlestown, and on the approach of a train jumped off, and in some unknown manner fractured his ribs. The team was not moved over four feet, the horses were uninjured and the load not displaced.

July 3. — John Yough, a passenger, came out of the cars after the train had started from Lincoln Square, Worcester, and persisted in jumping off, and fell on the pavement, receiving a scalp wound.

July 4. — John McDermott, a trespasser, got upon the forward end of a baggage car in a train just as it had started from Salem, and fell and was run over by the wheels of the train, receiving injuries of which he soon afterwards died.

July 4. — J. G. Austin, a passenger in a train, was struck by the parting of the bell-rope when a car was being set off at Georgetown, receiving a cut in the nose, and having both eyes blacked.

July 4. — Alfred Parker, a trespasser, walking on the tracks in Salem yard, was struck by engine of a passing train, receiving severe cuts and bruises.

July 5. — James Haggerty, a passenger, sitting on a car in a moving train, fell off at Mystic River bridge curve, and was badly bruised.

July 5. — Joseph Costello, a trespasser, walking on the bridge over Saugus River, was struck by a passing train, receiving bruises about the hips.

July 5. — Annie Maginnis, a trespasser, a young girl of ten years, ran across the tracks near Mystic bridge, in front of a moving train on the western division, and ran directly into another passing train on the eastern division, and was struck and killed.

July 11. — Edward A. Evitts, a brakeman, fell from his car near Peabody, cutting his forehead.

July 11. — Albert Hitchins, a trespasser, a child of seven years, under a box car in East Boston yard, had his arm cut off by another car being backed down upon the one he was playing under.

July 16. — Charles O. Nutting, a trespasser, a boy of seven years, caught hold of a moving freight car to steal a ride, but fell under the wheels of the train, which passed over one leg at the ankle.

July 16. — Walter Johnson, a trespasser, attempting to board a moving train at Salem, fell under the wheels, and had his left leg cut off.

July 17. — Mrs. Eliza Kelly, a trespasser on the tracks of the Marblehead Branch, near Loring Avenue, was struck by a passing train, receiving injuries from which she soon afterwards died.

July 17. — James Coleman, a trespasser, attempting to board a train after it had left Lynn station, fell and injured his leg.

July 19. — Joseph Mercier, a trespasser, attempting to board a train after it had started from Danversport station, fell under the wheels, receiving injuries from which he soon afterwards died.

July 20. — Joel M. Stowe, a brakeman, attempting to couple cars at Charlestown station, one being equipped with common draw-bar, and the other with Ames patent coupler, was caught, and had one of his fingers crushed.

July 31. — Edward Sprague, a switchman, attempting to couple cars in East Boston yard, was caught, and had his hand jammed.

August 3. — J. J. Wilson, a switchman, attempting to uncouple cars in Boston yard, was caught by his foot, in the track, and fell, the cars running over his hand, cutting off one finger.

August 10. — William Zippel, a brakeman, attempting to jump on the rear end of a tender while in motion in the Boston yard, fell, receiving serious injuries to his back.

August 28. — Samuel Backerstaff and Jacob Shellidy, trespassers, walking on the tracks near Revere station, were struck by a passing train. Backerstaff was killed and Shelliday had an arm broken.

August 30. — Fence rails loaded on a car broke loose and fell off near Groton station while the train was in motion, and struck the following-named employees riding on a rear car in the same train: namely, Dennis Morsey, gash over the eye, and teeth knocked out; Elzear Deschenas, leg cut; Joseph King, back hurt; Joseph St. John, arm injured.

September 1. — James Keneran, a trespasser, walking on the tracks near Pleasant Street crossing in Lynn, stepped in front of a passing train, and was struck, receiving injuries of which he soon afterwards died.

September 1. — Lucy D. Parkhurst, a trespasser, a child of eleven years of age, playing on the tracks near Gloucester station, was struck by a passing train, receiving a scalp wound and a cut on the forehead.

September 3. — Warren Tuttle, a trespasser, attempting to board a train at Salem while it was in motion, fell under the wheels, and had his foot badly cut.

September 3. — George Stevens, a trespasser, attempting to board a train after it had started from Amesbury station, came in contact with switch-frame on the bridge, and was thrown down and cut about the head.

September 6. — George A. Newton, driving a team, in attempting to cross the tracks at Perkins's crossing in Topsfield, in front of a passing train, was struck and killed.

September 14. — J. A. Cobb, a trespasser, fooling with other companions on the Malden station platform, backed off in front of a passing train, and was struck and killed.

September 20. — An unknown man, a trespasser, walking on the tracks near Reading station, was struck by a passing train and killed.

September 22. — John Powers, a trespasser, was caught between a moving freight-car and side-track platform in Haverhill, and crushed to death.

September 25. — Thomas Norton, attempting to cross the tracks in front of a passing engine at the west gate of the Washington Mills, Lawrence, was struck, receiving two scalp wounds.

September 27. — Walter Goss, with team, attempting to cross the tracks at a private crossing in Clinton, had his team tipped over by cars that were being set off, and was himself slightly injured about the head.

September 28. — Lewis A. Cobb, a trespasser, suffering from rheumatism, deliberately committed suicide by throwing himself, face downward, in front of a moving car in Lincoln Square yard, Worcester. He was run over and killed.

September 29. — John A. Prescott, a trespasser, to catch a train took a short cut through the tunnel at Salem, and was caught by a passing train, receiving injuries to his face and head.

September 29. — Joseph Stott, a trespasser, walking on the tracks near Bleachery station, was struck by a passing engine and killed.

Lowell System.

Oct. 20, 1887. — P. H. Murray, freight brakeman, while stepping from one car to another, slipped and received a fracture of one leg.

October 20. — John Hoyt, freight brakeman, while coupling cars had his wrist fractured.

October 21. — William McKenna, a boy about twelve years of age, drove a team against a train at Montvale, and was injured about the head. The horse was killed.

October 21. — George W. Ellis, a freight shifter at Lowell, had his right hand injured while coupling cars.

October 21. — Wilson Patty, a boy at Lowell, attempted to jump upon a freight train at Lowell, and was killed.

October 25. — George Anderson, fireman, was slightly injured in a collision between a wild coal train and an engine upon which he was riding. No other person hurt.

October 26. — Patrick Commiskey attempted to cross the track at Somerville, and was killed.

November 2. — H. S. Judkins, shifter, while climbing upon a freight car, was struck by an iron span at Lowell, and somewhat injured.

November 2. — John Hardy, shifter at Lowell, was slightly injured by striking a fire escape while upon car.

November 3. — Walter A. Judkins had his foot caught in a frog while coupling cars.

November 6. — Peter Wood, trespasser, struck while walking upon the track at North Billerica, and slightly injured.

November 7. — J. P. McGowan, brakeman, at East Cambridge, sprained an ankle while in the act of jumping upon a freight car.

November 14. — J. A. Adams, trespasser, attempted to jump upon a moving freight train at West Chelmsford and was killed.

November 18. — Joseph Amlin, laborer, had three fingers crushed while loading rails upon a car.

November 25. — Con Riley, employed at engine house, had his hand caught between cars which he was moving.

November 28. — John Gally, conductor on construction train, caught between cars and slightly injured.

December 3. — Charles Earle, a freight brakeman, slipped in attempting to jump upon a dump car, and had his foot somewhat bruised.

December 5. — George Robbins, freight brakeman at East Cambridge, was knocked down by train and slightly injured.

December 7. — P. Cassidy, freight brakeman, while coupling cars upon the short side of a curve, had his hips injured.

December 12. — Peter Meade, trespasser, while walking upon the track near Montvale, was killed.

December 12. — Fred L. Rogers, while coupling an engine to a car, had two fingers injured.

December 15. — W. Copeland, freight brakeman, slipped while stepping from one car to another, and sprained his wrist.

December 22. — Frank Cushing, trespasser, attempted to cross the track in front of an outward bound train in Boston, and had his leg broken.

December 24. — H. W. Smith, freight brakeman, had his finger jammed while coupling cars.

December 29. — D. W. Whiting had his arm broken while coupling cars.

December 31. — Wm. B. Bouduit, yard master, had a foot caught by the foot-board of the engine, and was slightly injured.

Jan. 2, 1888. — John Gally, freight brakeman, struck by tell-tale at Wilmington, and received slight cut.

January 2. — Charles H. Hersey, freight brakeman, had his finger injured by coupling cars.

January 3. — Charles Sears, freight brakeman, had his hand jammed while coupling cars.

January 16. — Charles Converse, a shifter at East Cambridge, was killed while staking cars.

January 20. — Charles O. Mayo, a freight brakeman, in coupling two dump cars had his hand bruised.

January 21. — John Maloney was killed and Patrick Donnelly injured in attempting to drive in front of a train at a private crossing.

January 21. — An unknown man attempted to pass in front of engine in Boston yard, and was instantly killed.

January 23. — M. L. Mullen, a brakeman, had his shoulder and head bruised.

January 25. — William Mahoney, while knocking coal off cars at Mystic wharf, was run over and had one leg cut off.

February 3. — Isaac Griffith, freight brakeman, while coupling cars, was injured in one leg.

February 9. — T. F. Hurley, freight brakeman, had his hand jammed while coupling cars at Ware.

February 20. — John Booth, freight brakeman, was badly injured through a defective brake.

March 4. — Henry Gray, freight brakeman, while coupling cars at East Cambridge, received a slight injury in his shoulders.

March 5. — Michael Mooney, freight brakeman, fell from the top of a car and injured his ankle.

March 25. — Ernest Blanchette, shifter, while coupling cars in Lowell, had his hand split.

April 13. — Edward Tesson, a young child, ran across the track in Somerville, and was struck by passenger train and killed.

April 16. — Harry A. Brown, a young man, attempted to get on a train while in motion at West Medford, fell and had one foot crushed.

April 20. — Walter Corlew, a boy, attempted to catch on a freight train on the Mystic Branch, and, missing his hold, was struck by a car and slightly injured.

April 22. — John Willett, a boy, tried to steal a ride, and had his right foot cut off.

April 25. — Lewis Chatto drove a baker's team in front of an engine on the Salem & Lowell Railroad at Peabody, and was slightly injured.

April 27. — Charles Hopkins, fireman, while leaning out of cab and looking backwards out of engineer's side, was struck by a signal post and killed.

April 28. — Thomas Hallahan, while walking upon the bridge in Boston, was struck by a passenger train and somewhat injured.

May 2. — James G. Hartshorn, conductor of freight train, had one finger crushed while coupling cars.

May 17. — Martin Tighe, while walking upon the track, was struck by freight train and killed.

May 29. — John Craven, brakeman, slipped while pulling out pin between engine and car, and was slightly bruised.

June 1. — Stephen A. Coleman jumped from train while in motion a short distance from Winchester station, and received slight bruises.

June 2. — L. W. Potter, a freight brakeman, was thrown from the top of a car by defective brake. Had his leg badly injured.

June 5. — Sarah Thayer, trespasser, while walking upon the track in Belchertown, had a leg broken.

June 12. — John N. Ames jumped from train while in motion between stations in Somerville, and was somewhat injured.

June 14. — Emma E. Davis, a trespasser, while walking upon the track, was killed in Somerville.

June 23. — E. S. Smith, freight brakeman, fell from top of a car, and was slightly injured.

June 23. — Dennis Crane, a boy, on Mystic Branch, while trespassing upon the track, was killed by a freight train.

June 30. — T. J. Sullivan, while upon steps of passenger train between East Cambridge and Boston, looked far out and fell off the train. He died the same day.

July 4. — Michael Hardy, freight brakeman, had his finger split while coupling cars in the Cambridge yard.

July 4. — C. Buckley jumped from express train while in rapid motion above Lowell, and was killed.

July 12. — Patrick Coughlin, trespasser, walking upon track at Somerville, stepped from one track to avoid a train, and was struck by another train upon the inward track. Died the same day.

July 12. — Daniel Donahue, brakeman, had his hand bruised while coupling cars.

July 13. — Frank Crowson, brakeman, had his hand jammed while coupling cars.

July 23. — W. A. Halpin, brakeman, at Amherst, had his hand injured while coupling cars.

July 24. — N. B. Stetson, employee, in attempting to get upon a dump car, slipped and had one foot jammed.

July 25. — D. W. Whiting, freight brakeman, at Ware, had his hand injured in making a hitch between two moving cars.

August 6. — John Reardon found dead upon the track about two miles south of Lowell; probably jumped from one train, and was struck by another upon the inward track.

August 13. — Thomas Midgerly, a shop carpenter at East Cambridge, while at work on a freight car, received serious injuries about the head and face, as the shifting engine backed cars upon the car upon which he was at work.

August 23. — Hatch Gandett, hod carrier, at East Cambridge, attempted to pass between freight cars, and was slightly jammed as one car was pushed against another.

August 31. — Thomas Morgan, a teamster, attempted to pass between two freight cars standing a short distance apart just as the shifting engine pushed one towards the other, and he was slightly injured.

September 1. — William West, a boy, attempted to jump off a freight train in Boston while in motion, fell between the cars and was killed.

September 6. — A. Graham, freight brakeman, at Mystic Wharf, had his finger slightly jammed while coupling cars.

September 8. — Frank Regal, trespasser, walking upon the track in Somerville, was drawn under the cars by suction, and killed.

September 13. — An unknown woman, trespasser, was struck at night, near Montvale, while walking upon the track. She subsequently died.

September 15. — F. J. Barry, a freight brakeman, had the ends of two fingers taken off while coupling cars at East Cambridge.

September 20. — Patrick Burke, shifter, slightly injured in Lowell yard because one freight car was shifted down upon others too speedily.

September 22. — James W. Cameron, freight brakeman, struck by engine of a passenger train and slightly injured, near Ware.

September 26. — Elmer Frost, freight brakeman, had hand bruised and crushed while coupling cars in Boston freight yard.

September 28. — M. J. Glinn, trespasser, was found opposite the track in Lowell freight yard, seriously injured; apparently intoxicated. He has since died.

General Information.	
Maximum weight of locomotives in working order,	58 tons.
Average weight of locomotives in working order,	34 "
Maximum weight of tenders full of fuel and water,	42½ "
Average weight of tenders full of fuel and water,	23 "
Maximum weight of passenger-cars,	28¾ "
Average weight of passenger-cars,	22 "
Average weight of mail and baggage cars,	19 "
Average weight of 8-wheel box freight-cars,	9½ "
Average weight of 4-wheel box freight-cars,	4½ "
Average weight of 8-wheel platform-cars,	7½ "
Average weight of 4-wheel platform-cars,	3¾ "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	46 11–12 feet.
Total length of heaviest engine and tender over all,	58 feet.
Total length of largest engine and tender over all,	58 "
Number of miles of telegraph owned by company,	29 miles.
What telegraph companies own a line on your right of way, and how many miles does each own?	121.25 "
Number of miles of road *operated* by your company not furnished with telegraph facilities: —	
From Bradford to Georgetown,	6.50 "

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When Built.
Mystic River.	4 Track.	Pile.	840 feet.	1887-88.

Bridges.	
Number of trestle bridges of 25 feet length and upwards,*	4
Aggregate length of same for single track (300 feet).	
Aggregate length of same for double track (2,408 feet).	
Aggregate length of same for quadruple track (840 feet).	
Number of spans of stone bridges of 25 feet and upwards,*	3
Aggregate length of same for double track (88 feet).	

* In Massachusetts, on miles road owned.

Number of spans of iron bridges of 25 feet and upwards,*	12
Aggregate length of same for single track (112 feet).	
Aggregate length of same for double track (870 feet).	
Aggregate length of same for triple track (45 feet).	
Aggregate length of same for quadruple track (64 feet).	
Number of spans of timber bridges of 25 feet and upwards,*	6
Aggregate length of same for single track (45 feet).	
Aggregate length of same for double track (537 feet).	
Number of crossings of highways at grade,*	55
Number of crossings of highways over railroad,	16
Number of crossings of highways under railroad,	5
Number of highway bridges 18 feet above track,	1
Number of highway bridges less than 18 feet above track,	15
Height of lowest bridge above the rail,	15 feet.
Number of crossings at which gates or flagmen are maintained,	50
Number of crossings at which there are neither signals nor flagmen,*	5
Number of railroad crossings at grade (specifying each),*	8
Union Freight Railroad, Boston.	
Fitchburg Railroad, Boston.	
Boston & Lowell Railroad, Boston.	
Eastern Division, Boston.	
Grand Junction Railroad, Boston.	
Salem & Lowell Railroad, Wilmington Junction.	
Lowell & Lawrence Railroad, Lawrence.	
Lowell & Lawrence Railroad, Lawrence.	

Rates of Fare, etc.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.098 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	1.952 "
Average rate of fare per mile for season-ticket passengers,	0.924 "
Average rate of fare per mile *received* from *all* passengers,	1.937 "
Average rate of local freight per ton per mile,	2.872 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	1.318 "
Average rate of freight per ton per mile *received* from *all* freight,	1.955 "

Relating to Passengers.

Passengers to Boston (including season),	8,734,164
Passengers from Boston (including season),	8,690,158
Season-ticket passengers to and from Boston,	1,436,148

Capital Stock.

Capital stock authorized by charter, $7,000,000 00	
Capital stock authorized by votes of company, 7,000,000 00	
Capital stock issued (number of shares, 70,000); amount paid in,	$7,000,000 00
Total Amount paid in, as per Books of the Co.,	7,000,000 00
Total number of stockholders, 3,884	
Number of stockholders in Massachusetts, 2,286	
Amount of stock held in Massachusetts, $4,665,900 00	

Debt.

Funded debt, as follows: —	
Bonds due Jan. 1, 1893, rate of interest 7 per cent.,	$1,500,000 00
Interest accrued on same during year, $105,000 00	
Bonds due Jan. 1, 1894, rate of interest 7 per cent.,	2,000,000 00
Interest accrued on same during year, $140,000 00	

* In Massachusetts, on miles road owned.

Improvement bonds due Feb. 2, 1905, rate of interest 4 per cent.,	$1,000,000 00
Interest accrued on same during year, $40,000 00	
Improvement bonds due Feb. 1, 1907, rate of interest 4 per cent.,	500,000 00
Interest accrued on same during year, $20,000 00	
Improvement bonds due Feb. 1, 1937, rate of interest 4 per cent.,	673,000 00
Interest accrued on same during year, $23,460 00	
$20,000.00 on $500,000.00 for 1 year; $3,460 00 on $173,000.00 for 6 months.	
TOTAL AMOUNT OF FUNDED DEBT,	$5,673,000 00

NAME AND RESIDENCE OF OFFICERS.

George C. Lord, *President*, Newton, Mass. Jas. T. Furber, *General Manager*, Lawrence, Mass. Wm. J. Hobbs, *General Auditor*, Malden, Mass. Wm. Merritt, *Supt. Western Div.*, Boston, Mass.; D. W. Sanborn, *Supt. Eastern Div.*, Somerville, Mass.; John W. Sanborn, *Supt. Northern Div.*, Wolfboro' Junction, N. H.; Geo. W. Hurlburt, *Supt. W. N. & P. Div.*, Worcester, Mass.; W. F. Simons, *Supt. Southern Div.*, Somerville, Mass.; H. E. Folsom, *Supt. Passumpsic Div.*, Lyndonville, Vt.; Geo. E. Todd, *Supt. Northern R. R.*, Concord, N. H. W. J. C. Kenney, *General Freight Agent*, Danvers, Mass. H. N. Turner, *General Traffic Manager* (Lowell System), Winchester, Mass. D. C. Prescott, *General Freight Agent* (Lowell System), Manchester, Mass. D. J. Flanders, *General Passenger Agent*, Malden, Mass. Amos Blanchard, *Treasurer*, Andover, Mass. Chauncey P. Judd, *Clerk of Corporation*, Reading, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

George C. Lord, Newton, Mass. Amos Paul, So. Newmarket, N. H. Nath'l J. Bradlee,* Boston, Mass. Wm. S. Stevens, Dover, N. H. James R. Nichols,* Haverhill, Mass. Jos. S. Ricker, Deering, Me. Richard Olney, Boston, Mass. Samuel C. Lawrence, Medford, Mass. Frank Jones, Portsmouth, N. H.

PROPER ADDRESS OF THE COMPANY.

BOSTON & MAINE RAILROAD,

BOSTON, MASS.

GEORGE C. LORD,
AMOS PAUL,
WM. S. STEVENS,
J. S. RICKER,
FRANK JONES,
RICHARD OLNEY,
SAMUEL C. LAWRENCE,
Directors.
AMOS BLANCHARD,
Treasurer.
JAS. T. FURBER,
General Manager.

* Deceased.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 28, 1888. Then personally appeared George C. Lord, Amos Paul, William S. Stevens, J. S. Ricker, Frank Jones, Richard Olney, Samuel C. Lawrence, Amos Blanchard and James T. Furber, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. P. JUDD,
Justice of the Peace.

Having examined the foregoing report, and believing the same to be correct, it is hereby approved.

GEO. H. POOR,
Commissioner for Mass.

DEC. 4, 1888.

REPORT

OF THE

BOSTON & PROVIDENCE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[From April 1, 1888, this road was operated by the Old Colony Railroad Company, and the statistics as to traffic operations are to that date only.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$1,194,307 31
Total expense (including taxes),		1,311,015 33
Net deficit,		116,708 02
Rentals: Attleborough Branch,		6,914 25
Interest accrued during year (balance of interest account),		53,836 93
Dividends declared (10 per cent.),		400,000 00
Balance for the year (deficit),		577,459 20
Balance at commencement of year,	$116,041 42	
Add: —		
Bonus received from Old Colony Railroad,	1,300,000 00	
Premium on bonds sold,	10,000 00	
Revaluation of equipment,	738,876 49	
	$2,048,876 49	
Deduct: —		
Bonus paid stockholders, $1,300,000 00		
Worthless acc'ts charged off, 20,419 42		
	1,320,419 42	
	$728,457 07	
Balance at commencement of year as so changed,		844,498 49
Balance Sept. 30, 1888 (surplus),		267,039 29
ANALYSIS OF EARNINGS.		
From local passengers,		$511,326 88
through passengers (to and from other roads),		75,353 30
express and extra baggage,		33,933 86
mails,		5,979 71
Total earnings from passenger department,		626,593 75
From local freight,		188,120 03
through freight (to and from other roads),		133,970 57
Total earnings from freight department,		322,090 60
TOTAL TRANSPORTATION EARNINGS,		948,684 35
Rents for use of road,		239,929 16
Income from all other sources, viz.:		15,693 80
Rents,	$15,693 80	
TOTAL INCOME FROM ALL SOURCES,		$1,194,307 31

ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$24,071 99
Legal expenses,		52,981 00
Insurance,		4,668 23
Stationery and printing,		6,984 76
Outside agencies and advertising,		5,220 38
Contingencies and miscellaneous,		1,742 19
Repairs of bridges (including culverts and cattle-guards),		63,191 77
Repairs of buildings,		65,129 09
Repairs of fences, road crossings and signs,		1,707 50
Renewal of ties,		4,349 70
[Number laid, 7,704.]		
Repairs of road-bed and track,		53,174 52
Repairs of locomotives,		51,796 44
Fuel for locomotives,		59,608 00
[Tons of coal, 14,076.]		
Water supply,		5,211 45
Oil and waste,		10,240 15
Locomotive service,		46,718 88
Repairs of passenger-cars,		63,495 89
Passenger-train service,		43,799 07
Passenger-train supplies,		9,147 52
Repairs of freight-cars,		17,904 10
Freight-train service,		13,093 69
Freight-train supplies,		839 89
Mileage freight-cars,		2,710 74
Telegraph expenses,		2,101 57
Loss and damage, freight and baggage,		587 33
Loss and damage, property and cattle,		3,440 50
Personal injuries,		540,615 60
Agents and station service,		136,073 66
Station supplies,		17,028 82
TOTAL OPERATING EXPENSES,		$1,307,634 43
Taxes,		3,380 90
TOTAL OPERATING EXPENSES AND TAXES,		$1,311,015 33
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Superstructure, including rails (2d track W. Roxbury Branch),		$141,941 66
Engine-house, Roxbury,		52,581 53
TOTAL FOR CONSTRUCTION,		194,523 19
Locomotives (revaluation),		211,175 00
Parlor and sleeping cars, passenger, mail and baggage cars (revaluation),		313,474 35
Freight and other cars,		139,185 00
TOTAL FOR EQUIPMENT,		663,834 35
Other expenditures charged to property account:		
Tools and machinery (revaluation),		75,042 14
Three shares common stock Prov., Warren & Bristol R. R.,		60 00
Land in Hyde Park, Attleborough and Canton,		15,815 00
TOTAL CHARGES TO PROPERTY ACCOUNTS,		$949,274 68
Property sold (or reduced in valuation on the books) and credited property accounts during the year:		
Sold Attleborough Branch stock,	$3,000 00	
Sold land in West Roxbury,	2,243 10	
Total credits to property accounts,		5,243 10
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		$944,031 58

Balance Sheet Sept. 30, 1888.

Assets.

Cost of road,	$5,046,088 30	
Cost of equipment,	871,234 35	
Lands in Massachusetts,	77,573 98	
Stock of Providence, Warren & Bristol R. R.,	158,505 00	
Stock of Union Freight R. R.,	79,014 42	
Total Permanent Investments,		$6,232,416 05
Cash,	$106,626 68	
Debit balance,	39,022 06	
Total Cash Assets,		145,648 74
Total Assets,		$6,378,064 79

Liabilities.

Capital stock,		$4,000,000 00
Funded debt,		2,005,000 00
Unfunded debt, viz.:		106,025 50
Dividends unpaid,	$6,025 50	
Dividends payable October 1,	100,000 00	
Profit and loss balance,		267,039 29
Total Liabilities,		$6,378,064 79

Mileage, Traffic, etc.

Passenger-train mileage,	409,030
Freight-train mileage,	119,452
Total Revenue-Train Mileage,	528,482
Switching-train mileage,	29,095
Total Train Mileage,	557,577
Number of season-ticket passengers,	295,800
Number of local passengers (including season),	3,286,177
Number of through passengers (to and from other roads),	114,900
Total Number of Passengers carried,	3,401,077
Local passenger mileage (local passengers carried one mile),	27,800,153
Through passenger mileage (through passengers carried one mile),	3,500,113
Total Passenger Mileage,	31,300,266
Number tons local freight,	207,021
Number tons through freight (to and from other roads),	181,433
Total Number Tons Freight carried,	388,454
Local freight mileage (tons local freight carried one mile),	5,308,018
Through freight mileage (tons through freight carried one mile),	5,745,982
Total Freight Mileage,	11,054,000
Average weight of passenger-trains (exclusive of passengers),	350,000 lbs.
Average number of cars in passenger-trains,	6
Average weight of freight-trains (exclusive of freight),	682,000 lbs.
Average number of cars in freight-train,	30
Average number of persons employed,	1,011

Description of Road.

Main line of road from Boston to Providence,	44.000 miles.
Main line of road in Massachusetts,	38.142 "
Main line of road in Rhode Island,	5.858 "
Double track on main line,	44.000 "
Same in Massachusetts,	38.142 "

Branches owned by company, viz.:	
West Roxbury (single track),	5.366 miles.
Dedham (single track),	2.224 "
India Point (single track),	8.048 "
Stoughton (single track),	4.114 "
Total length of branches owned by company,	19.752 "
Total length of branches owned by company in Massachusetts,	15.189 "
Total length of branches owned by company in Rhode Island,	4.563 "
Total road belonging to this company,	63.752 "
Sidings and other tracks not above enumerated,	52.000 "
Same in Massachusetts,	40.000 "
Total Length of Track computed as Single Track,	159.752 "
Same in Massachusetts,	131.473 "
Total length of steel rails in tracks, not including steel-top rails,	107.752 "
[Weights per yard, 70 pounds.]	
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Attleborough Branch, length,	4.000 miles.
Total length of above road,	4.000 "
Total length of above road in Massachusetts,	4.000 "
Total miles of road operated by this company,	67.752 "
Total miles of road operated by this company in Massachusetts,	57.331 "
Number of stations in Massachusetts on all *roads operated* by this company,	43
Number of telegraph offices in same,	13
Number of stations on all *roads owned* by this company,	41
Same in Massachusetts,	37

List of Accidents.

	From Causes beyond their own Control (in Massachusetts).		From their own Misconduct or Carelessness (in Massachusetts).		Total in Massachusetts.		Total on Whole Road Operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	–	–	–	–	–	–	–	–
Employees,	1	–	–	5	1	5	1	5
Others,	–	–	2	8	2	8	2	8

Statement of each Accident in Massachusetts.

Oct. 22, 1887. — Wm. Carey, switchman at Stoughton, attempted to get on locomotive as it was leaving engine-house; was jammed between door-post and locomotive. Not much injured.

October 22. — Patrick I. Marron, aged twenty-five years, fell under train, and had part of one heel taken off as train was entering Stoughton station.

October 22. — Patrick Candry drove tip-cart against 5.07 P.M. train at Forest Hills. He drove around the gate. Horse had leg broken. Thomas Corbett was thrown out of cart and hurt.

October 24. — The 9.30 A.M. train out of Boston struck a two-horse wagon, loaded with beer, at New Heath Street. Horses killed and driver (Michael Clancy) much shaken up. Electric signal did not ring, and gateman did not see train in season to close gate against team, which was rapidly coming down hill

November 3. — Wm. Boyd, eighty-seven years of age and very deaf, was struck by train at Mansfield station crossing at 3.20 P.M.; one leg broken. Death was the result in a few days.

December 1. — A butcher's team without driver was struck at Chestnut Street, North Attleborough. Horse was killed.

December 1. — Runaway horse, with shaft and fore wheels, ran under gate at Old Heath Street, Boston, against a passing freight-train. Horse killed.

December 2. — Heustis Eliot, brakeman on train from Stoughton, fell from train near Boston & Albany crossing. Shoulder dislocated and other bruises.

December 27. — Michael McCardel, brakeman of gravel-train, slightly injured in yard opposite repair shop.

December 8. — Owen Winn, freight brakeman, endeavoring to uncouple cars, was jammed, but not seriously.

December 10. — John Alsop, aged twelve years, playing around freight cars in Boston yard, was run over; right leg crushed. He died same day.

Jan. 12, 1888. — Peter Finnegan, gateman at Forest Hills, was killed in his house by 6.05 P.M. train out of Boston. Train made usual stop. The rear truck of last car, for some reason unknown, took the branch track and demolished the gateman's house.

February 23. — Edward W. Fuller, passenger brakeman, was hit in Boston yard by locomotive; two fingers and two toes were amputated at Massachusetts General Hospital.

March 2. — Michael Broderick went under Tremont Street gate and was struck by passenger-train, and had his great toe broken.

March 9. — Mrs. Elizabeth LaSalle, sixty-five years of age, was killed at West Mansfield station crossing. She came out of store; attempted to cross, unmindful of train. The flagman shouted to her several times.

March 22. — Arthur L. Perry, aged twenty-six years, threw himself in front of the 7.30 A.M. Mansfield to Boston train, on the Fowl Meadows; was hit and slightly injured. He was given in charge of authorities at Hyde Park.

March 30. — Eddie Reardon, three and one-half years of age, climbed the step of car of 10.10 A.M. train from Boston as it was leaving Roxbury. He fell, and last truck of train ran over his foot.

General Information.	
Maximum weight of locomotives in working order,	102.000 lbs.
Average weight of locomotives in working order,	68.000 "
Maximum weight of tenders full of fuel and water,	67.800 "
Average weight of tenders full of fuel and water,	40.700 "
Maximum weight of passenger-cars,	48.000 "
Average weight of passenger-cars,	39.000 "
Average weight of mail and baggage cars,	38.000 "
Average weight of 8-wheel box freight-cars,	18.500 "
Average weight of 4-wheel box freight-cars,	8.500 "
Average weight of 8-wheel platform-cars,	14.550 "
Average weight of 4-wheel platform-cars,	7.550 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	46 feet.
Total length of heaviest engine and tender over all,	56 " 9 in.
What telegraph companies own a line on your right of way, and how many miles does each own?	Western Union Telegraph Company; 53.48.

BRIDGES BUILT WITHIN THE YEAR IN MASSACHUSETTS.

LOCATION.	KIND.	MATERIAL.	LENGTH.	WHEN BUILT.
Hyde Park,	Truss.	Iron.	68 feet 9 inches.	–
Hyde Park,	5 Track, Plate Girder.	Iron.	50 "	–
Readville,	2 Track, Arch.	Iron and Béton.	17 "	–
Hebronville,	2 Track, Plate Girder.	Iron.	85 "	March, 1888.
Hebronville,	2 Track, Plate Girder.	Iron.	84 " 3 "	–
Ward 23, Boston,	3 Track, Arch.	Stone.	128 "	Dec., 1887.
Ward 23, Boston,	Stringer.	Iron and Wood.	35 "	–
Ward 23, Boston,	"	" " "	32 "	–
Ward 23, Boston,	"	" " "	47 "	–
Ward 23, Boston,	"	" " "	41 "	–
Ward 23, Boston,	2 Track, Plate Girder.	Iron.	39 " 6 "	–
Dedham,	2 Track, Plate Girder.	"	122 "	–
Dedham,	Plate Girder.	"	65 "	–
Attleborough,	" "	"	26 " 3 "	–
North Attleborough,	" "	"	–	–

BRIDGES.

Number of spans of stone bridges of 25 feet and upwards,*	5
Aggregate length of same for double track (333 feet).	
Number of spans of iron bridges of 25 feet and upwards,*	15
Aggregate length of same for single track (320 feet).	
Aggregate length of same for double track (84 feet).	
Aggregate length of same for triple track (169 feet).	
Aggregate length of same for quadruple track (154 feet).	
Number of crossings of highways at grade,*	53
Number of crossings of highways over railroad,	33
Number of crossings of highways under railroad,	7
Number of highway bridges 18 feet above track,	16
Number of highway bridges less than 18 feet above track,	19
Height of lowest bridge above the rail,	14 ft., 1 in.
Number of crossings at which gates or flagmen are maintained,	39
Number of crossings at which electric signals are maintained,*	16
Number of crossings at which there are neither signals nor flagmen,*	13
Number of railroad crossings at grade (specifying each),*	1
Number of railroad crossings under other railroads (specifying each):*	2
New York & New England at Readville.	
Providence & Worcester at Attleborough.	

RATES OF FARE, ETC.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	1.956 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.153 "
Average rate of fare per mile for season-ticket passengers,	.913 "
Average rate of fare per mile *received* from *all* passengers,	1.874 "
Average rate of local freight per ton per mile,	3.354 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	2.331 "
Average rate of freight per ton per mile *received* from *all* freight,	2.914 "

RELATING TO PASSENGERS.

Passengers to Boston (including season),	1,224,360
Passengers from Boston (including season),	1,286,258
Season-ticket passengers to and from Boston,	209,278

* In Massachusetts, on miles road owned.

Capital Stock.		
Capital stock authorized by charter, . .	$4,000,000 00	
Capital stock authorized by votes of company,	4,000,000 00	
Capital stock issued (number of shares, 40,000); amount paid in, ...		$4,000,000 00
Total Amount paid in, as per Books of the Co., .		4,000,000 00
Total number of stockholders, ...	1,471	
Number of stockholders in Massachusetts, . .	1,177	
Amount of stock held in Massachusetts, . .	$3,420,500 00	
Debt.		
Funded debt, as follows: —		
Bonds due July 1, 1893, rate of interest 7 per cent., . .		$500,000 00
Interest paid on same during year, . .	$35,000 00	
Bonds due July 1, 1918, rate of interest 4 per cent., . .		500,000 00
Interest paid on same during year, . .	$20,000 00	
Notes payable, ...		1,005,000 00
Total Amount of Funded Debt, ...		$2,005,000 00

Name and Residence of Officers.

Henry A. Whitney, *President*, Milton, Mass. Benjamin B. Torrey, *Treasurer*, Boston, Mass. Winslow Warren, *Clerk of Corporation*, Dedham, Mass.

Name and Residence of Directors last Elected.

Henry A. Whitney, Milton, Mass. T. P. I. Goddard, Providence, R. I. Wm. R. Robeson, Lenox, Mass. Joseph W. Balch, Boston, Mass. Royal C. Taft, Providence, R. I. Robert H. Stevenson, Boston, Mass. Roger Wolcott, Boston, Mass.

Proper Address of the Company.

BOSTON & PROVIDENCE RAILROAD CORPORATION,
Boston, Mass.

HENRY A. WHITNEY,
JOSEPH W. BALCH,
ROB'T H. STEVENSON,
ROGER WOLCOTT,
Directors.

BENJAMIN B. TORREY,
Treasurer.

A. A. FOLSOM,
Superintendent (to April 11, 1888).

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Nov. 21, 1888. Then personally appeared Henry A. Whitney, Joseph W. Balch, Robert H. Stevenson, Roger Wolcott, Benjamin B. Torrey, Albert A. Folsom, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WINSLOW WARREN,
Justice of the Peace.

REPORT

OF THE

BOSTON, REVERE BEACH & LYNN RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[A narrow-gauge road.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$251,533 79
Total expense (including taxes),		160,066 32
Net income,		91,467 47
Interest accrued during year:		26,338 90
On funded debt,	$21,000 00	
On other debt,	5,338 90	
Dividends declared (7 per cent.),		42,000 00
Balance for the year (surplus),		23,128 57
Balance at commencement of year,	$89,577 88	
Deduct: —		
Locomotives,	5,625 00	
Passenger cars,	2,449 40	
Real estate,	87 73	
Telegraph,	600 05	
Balance at commencement of year as so changed,		80,815 70
Balance Sept. 30, 1888 (surplus),		103,944 27
ANALYSIS OF EARNINGS.		
From local passengers,		$231,980 13
TOTAL TRANSPORTATION EARNINGS,		231,980 13
Income from all other sources, viz.:		19,553 66
Miscellaneous,	$11,390 13	
Rent,	8,163 53	
TOTAL INCOME FROM ALL SOURCES,		$251,533 79
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$7,779 80
Legal expenses,		673 65
Insurance,		800 00
Stationery and printing,		3,456 29
Outside agencies and advertising,		1,591 46
Contingencies and miscellaneous,		3,132 31
Repairs of bridges (including culverts and cattle-guards),		2,034 96
Repairs of buildings,		6,549 12
Repairs of fences, road crossings and signs,		434 80
Renewal of ties,		630 00
[Number laid, 1,800.]		
Repairs of road-bed and track,		8,607 30
Repairs of locomotives,		5,947 30
Fuel for locomotives,		13,570 70
[Tons of coal, 4,628.]		

Water supply,		$1,466 53
Oil and waste,		957 94
Locomotive service,		8,755 05
Repairs of passenger-cars,		11,715 93
Passenger-train service,		15,853 90
Passenger-train supplies,		1,294 01
Telegraph expenses,		1,028 28
Loss and damage, property and cattle,		200 00
Personal injuries,		253 00
Agents and station service,		20,902 21
Station supplies,		3,776 70
Ferry expenses,		25.737 94
TOTAL OPERATING EXPENSES,		147,149 18
Taxes,		12,917 14
TOTAL OPERATING EXPENSES AND TAXES,		160,066 32
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Land, land damages and fences,		$6,832 76
TOTAL FOR CONSTRUCTION,		6,832 76
Passenger, mail and baggage cars (number, 8),		21,544 68
TOTAL FOR EQUIPMENT,		21,544 68
TOTAL CHARGES TO PROPERTY ACCOUNTS,		28,377 44
Property sold (or reduced in valuation on the books) and credited property accounts during the year:		
Locomotives,	$8,625 00	
Real estate,	2,959 49	
Telegraph,	600 05	
Total credits to property accounts,		12,184 54
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		16,192 90

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$688,336 41	
Cost of equipment,	233,014 77	
Lands,	54,072 27	
Ferry property,	141,868 70	
Stock of Boston, Winthrop & Shore R. R.,	30,000 00	
TOTAL PERMANENT INVESTMENTS,		$1,147,292 15
Cash,	$13,679 90	
Bills receivable,	61,656 00	
Materials and supplies,	17,856 62	
Debit balances,	2,855 32	
TOTAL CASH ASSETS,		96,047 84
TOTAL ASSETS,		$1,243,339 99
LIABILITIES.		
Capital stock,		$600,000 00
Funded debt,		350,000 00
Unfunded debt, viz.:		189,395 72
Interest unpaid,	$780 00	
Dividends unpaid,	874 00	
Notes payable,	171,000 00	
Vouchers and accounts,	16,741 72	
Profit & Loss balance,		103,944 27
TOTAL LIABILITIES,		$1,243,339 99

Present or Contingent Liabilities not included in the Balance Sheet.	
Bonds guaranteed by this company or a lien on its road, viz.: $250,000 Boston, Winthrop & Shore R. R. 1st mortgage 5 per cent. 20-year bonds, dated Sept. 1, 1886.	
MILEAGE, TRAFFIC, ETC.	
Passenger-train mileage,	181,525
TOTAL REVENUE-TRAIN MILEAGE,	181,525
Other train mileage,	3,065
TOTAL TRAIN MILEAGE,	184,590
Number of season-ticket passengers,	433,672
Number of local passengers (including season),	2,217,306
Number of through passengers (to and from other roads)	28,239
TOTAL NUMBER OF PASSENGERS CARRIED,	2,245,545
Local passenger mileage (local passengers carried one mile),	11,663,083
Through passenger mileage (through passengers carried one mile),	87,742
TOTAL PASSENGER MILEAGE,	11,750,825
Average weight of passenger-trains (exclusive of passengers),	86 tons.
Average number of cars in passenger-trains,	3.50
Average number of persons employed,	132
DESCRIPTION OF ROAD.	
Main line of road from East Boston to Lynn,	8.8 miles.
Main line of road in Massachusetts,	8.8 "
Double track on main line,	8.3 "
Same in Massachusetts,	8.3 "
Total road belonging to this company,	17.1 "
Sidings and other tracks not above enumerated,	2.7 "
Same in Massachusetts,	2.7 "
TOTAL LENGTH OF TRACK COMPUTED AS SINGLE TRACK,	19.8 "
Same in Massachusetts,	19.8 "
Total length of steel rails in tracks, not including steel-top rails,	17.1 "
[Weights per yard, 50 pounds.]	
Total miles of road operated by this company,	8.8 "
Total miles of road operated by this company in Massachusetts,	8.8 "
Number of stations in Massachusetts on all *roads operated* by this company,	11
Number of telegraph offices in same,	8
Number of stations on all *roads owned* by this company,	11
Same in Massachusetts,	11
EQUIPMENT.	
Number of locomotives,	8
Number of passenger-cars,	45
Number of freight-cars (basis of 8 wheels),	3
Number of other cars,	15

LIST OF ACCIDENTS.

	FROM CAUSES BEYOND THEIR OWN CONTROL (IN MASSACHUSETTS).		FROM THEIR OWN MISCONDUCT OR CARELESSNESS (IN MASSACHUSETTS).		TOTAL IN MASSACHUSETTS.		TOTAL ON WHOLE ROAD OPERATED.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	–	–	–	3	–	3	–	3
Employees,	–	2	–	–	–	2	–	2
Others,	–	–	2	1	2	1	2	1

STATEMENT OF EACH ACCIDENT IN MASSACHUSETTS.

Oct. 31, 1887. — James Lucas tried to cross track with a wheelbarrow loaded with wood in front of incoming train at East Boston. Lost part of right hand.

June 16, 1888. — A man named Cook, a trespasser, was instantly killed while walking on track.

July 4. — John Doucrette, a passenger, while standing on car steps was knocked off the train by truss of West Lynn bridge, and badly bruised.

July 30. — Mary Galvin (about twenty-five years of age), a trespasser, ran in front of express-train near Crescent Beach, and was instantly killed.

August 9. — A. A. Sweetland, a passenger, while riding in smoking-car approaching tunnel at East Boston, got a broken arm by putting it out of car window to knock ashes from cigar.

August 30. — M. W. Houghton, an employee, while helping cut off a car had bell cord slip through his hand, making a bad flesh wound.

September 7. — E. F. Keefe, a passenger, was thrown against platform hand-rail by quick stopping of train, and had thigh bruised.

September 23. — G. J. Consault, an employee (fireman), received scalp wound, caused by a water-tank spout coming in contact with his head.

GENERAL INFORMATION.	
Maximum weight of locomotives in working order,	76,000 lbs.
Maximum weight of passenger-cars,	18 tons.
Average weight of passenger-cars,	14 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	30 feet.
Total length of heaviest engine and tender over all,	39 "
Number of miles of telegraph owned by company: About 3.	
What telegraph companies own a line on your right of way, and how many miles does each own? New England Telephone and Telegraph Company; about 6½ miles.	
BRIDGES.	
Number of trestle bridges of 25 feet length and upwards,	5
Aggregate length of same for single track (7,800 feet).	
Number of spans of timber bridges of 25 feet and upwards,	1
Aggregate length of same for single track (80 feet).	
Number of crossings of highways at grade (9 highways, 3 other ways),	12
Number of crossings of highways over railroads,	3
Number of highway bridges less than 18 feet above track,	1
Height of lowest bridge above the rail,	12 ft. 4 in.
Number of crossings at which gates or flagman are maintained,	11
Number of crossings at which there are neither signals nor flagmen (1 in summer, 3 in winter),	4
RATES OF FARE, ETC.	
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.10 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.90 "
Average rate of fare per mile for season-ticket passengers,	1.01 "
Average rate of fare per mile *received* from *all* passengers,	1.54 "
RELATING TO PASSENGERS.	
Passengers to Boston (including season),	1,115,113
Passengers from Boston (including season),	1,130,432
Season-ticket passengers to and from Boston,	423,591

CAPITAL STOCK.		
Capital stock authorized by charter, . .	Unlimited.	
Capital stock authorized by votes of company,	$650,000 00	
Capital stock issued (number of shares, 6,000); amount paid in, ...		$600,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO., .		600,000 00
Total number of stockholders, ...	343	
Number of stockholders in Massachusetts, . . .	316	
Amount of stock held in Massachusetts, . .	$537,600 00	
DEBT.		
Funded debt, as follows: —		
Mortgage bonds due 1897, rate of interest 6 per cent., .		$350,000 00
Interest paid on same during year, . .	$21,000 00	

NAME AND RESIDENCE OF OFFICERS.

Edwin Walden, *President*, Lynn, Mass. C. A. Hammond, *Superintendent*, Lynn, Mass. John A. Fenno, *Treasurer and Clerk of Corporation*, Newton, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Edwin Walden, Lynn, Mass. Amos F. Breed, Lynn, Mass. D. H. Sweetser, Lynn, Mass. Joseph W. Smith, Andover, Mass. Matthew Bolles, Boston, Mass. Isaac P. T. Edmands, Boston, Mass. Edw. Tyler, Boston, Mass. Jesse Tirrell, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

BOSTON, REVERE BEACH AND LYNN RAILROAD COMPANY,
BOSTON, MASS.

EDWIN WALDEN,
D. H. SWEETSER,
JESSE TIRRELL,
MATTHEW BOLLES,
JOSEPH W. SMITH,
EDW. TYLER,
ISAAC P. T. EDMANDS,
AMOS F. BREED,
Directors.
JOHN A. FENNO,
Treasurer.
CHAS. A. HAMMOND,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 31, 1888. Then personally appeared Edwin Walden, D. H. Sweetser, Jesse Tirrell, Matthew Bolles, Joseph W. Smith, Edw. Tyler, Isaac P. T. Edmands, Amos F. Breed and Chas. A. Hammond, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JOHN A. FENNO,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 31, 1888. Then personally appeared John A. Fenno, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

DAVID H. SWEETSER,
Justice of the Peace.

REPORT

OF THE

BOSTON, WINTHROP & SHORE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[A narrow-gauge road.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$28,748 95
Total expense (including taxes),		20,549 63
Net income,		8,199 32
Interest accrued during year:		11,421 25
On funded debt,	$11,421 25	
Balance for the year (deficit),		3,221 93
Balance at commencement of year,		4,554 49
Balance Sept. 30, 1888 (surplus),		1,332 56
ANALYSIS OF EARNINGS.		
From local passengers,		$25,757 05
through passengers (to and from other roads),		2,823 90
TOTAL TRANSPORTATION EARNINGS,		28,580 95
Income from all other sources, viz.:		168 00
Miscellaneous,	$48 00	
Rents,	120 00	
TOTAL INCOME FROM ALL SOURCES,		28,748 95
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,349 88
Legal expenses,		240 00
Stationery and printing,		777 35
Outside agencies and advertising,		63 12
Contingencies and miscellaneous,		1,329 08
Repairs of bridges (including culverts and cattle-guards),		28 40
Repairs of buildings,		118 41
Repairs of road-bed and track,		1,657 10
Repairs of locomotives,		971 25
Fuel for locomotives,		4,024 15
[Tons of coal, 946.]		
Water supply,		63 60
Oil and waste,		314 07
Locomotive service,		3,560 80
Repairs of passenger-cars,		476 33
Passenger-train service,		2,437 70
Passenger-train supplies,		758 94
Personal injuries,		50 00
Agents and station service,		2,039 35
TOTAL OPERATING EXPENSES,		$20,259 53
Taxes,		290 10
TOTAL OPERATING EXPENSES AND TAXES,		$20,549 63

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.	
Grading and masonry,	$46,446 66
Bridging,	25,641 48
Superstructure, including rails,	5,940 23
Land, land damages and fences,	2,055 00
Passenger and freight stations, wood-sheds and water-stations,	4,223 12
Engineering, agencies, salaries and other expenses during construction,	964 32
TOTAL FOR CONSTRUCTION,	85,270 81
Locomotives (number, 1),	3,000 00
Passenger, mail and baggage cars (number, 2),	4,000 00
TOTAL FOR EQUIPMENT,	7,000 00
TOTAL CHARGES TO PROPERTY ACCOUNTS,	$92,270 81
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,	92,270 81

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$488,530 36	
Cost of equipment,	13,500 00	
Lands in Revere and Winthrop,	94,100 00	
TOTAL PERMANENT INVESTMENTS,		$596,130 36
Cash,	$1,476 52	
Debit balances,	4,949 68	
TOTAL CASH ASSETS,		6,426 20
TOTAL ASSETS,		$602,556 56
LIABILITIES.		
Capital stock,		$289,600 00
Funded debt,		246,000 00
Unfunded debt, viz.:		65,624 00
Interest unpaid,	$1,850 00	
Notes payable,	60,000 00	
Vouchers and accounts,	3,774 00	
Profit & Loss balance,		1,332 56
TOTAL LIABILITIES,		$602,556 56
Present or Contingent Liabilities not included in the Balance Sheet.		
Other liabilities, viz.:		$4,000 00
Unsettled land claims.		
TOTAL (*not included in Balance Sheet*),		4,000 00

MILEAGE, TRAFFIC, ETC.	
Passenger-train mileage,	64,725
TOTAL REVENUE-TRAIN MILEAGE,	64,725
Other train mileage,	3,741
TOTAL TRAIN MILEAGE,	68,466
Number of local passengers (including season),	430,805
Number of through passengers (to and from other roads),	28,239
TOTAL NUMBER OF PASSENGERS CARRIED,	459,044

Local passenger mileage (local passengers carried one mile),	87,742
Through passenger mileage (through passengers carried one mile),	1,104,772
TOTAL PASSENGER MILEAGE,	1,192,514
Average weight of passenger-trains (exclusive of passengers),	50 tons.
Average number of cars in passenger-trains,	1.80
Average number of persons employed,	17
DESCRIPTION OF ROAD.	
Main line of road from Winthrop Junction to Point Shirley,	3.60 miles.
Main line of road in Massachusetts,	3.60 "
Branches owned by company, viz.:	
Branch Junction to Shirley Junction (single track),	2.00 "
Crescent Beach to Ocean Spray (single track),	2.20 "
Crescent Beach to Point of Pines (single track),	2.60 "
Total length of branches owned by company,	6.80 "
Total road belonging to this company,	10.40 "
Sidings and other tracks not above enumerated,	.30 "
Same in Massachusetts,	.30 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	10.70 "
Same in Massachusetts,	10.70 "
Total length of steel rails in tracks, not including steel-top rails, [Weights per yard, 50 pounds.]	2.00 "
Total miles of road operated by this company,	10.40 "
Total miles of road operated by this company in Massachusetts,	10.40 "
Number of stations in Massachusetts on all *roads operated* by this company,	8
Number of telegraph offices in same,	1
EQUIPMENT.	
Number of locomotives,	3
Number of passenger-cars,	5
GENERAL INFORMATION.	
Maximum weight of locomotives in working order,	29 tons.
Average weight of locomotives in working order,	24 "
Maximum weight of passenger-cars,	12 "
Average weight of passenger-cars,	11½ "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	21 ft. 7 in.
Total length of heaviest engine and tender over all,	35 ft.
What telegraph companies have a line on your right of way, and how many miles does each own?	New England Telephone and Telegraph Company; about 1 mile.
If road was first opened for operation during the past year, state the date.	Extension of Winthrop Branch, opened June 25.

BRIDGES BUILT WITHIN THE YEAR IN MASSACHUSETTS.

LOCATION.	KIND.	MATERIAL.	LENGTH.	WHEN BUILT.
Crystal Cove, Winthrop,	Pile and Draw.	Spruce Piles, Hard Pine Superstructure.	3,700 feet.	March to June, 1888.

BRIDGES.	
Number of trestle bridges of 25 feet length and upwards,	2
Aggregate length of same for single track (3,900 feet).	
Number of crossings of highways at grade,	10
Number of crossings of highways over railroad,	3

Number of highway bridges 18 feet above track. . . .	1
Number of highway bridges less than 18 feet above track, .	2
Height of lowest bridge above the rail, ...	13 feet.
Number of crossings at which gates or flagmen are maintained,	3
Number of crossings at which there are neither signals nor flagmen, ...	7

RATES OF FARE, ETC.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	3.92 cents.
Average rate of fare per mile *received* from passengers to and from other roads, ...	3.92 "
Average rate of local freight per ton per mile, . . .	2.60 "

CAPITAL STOCK.

Capital stock authorized by charter, . . Unlimited.	
Capital stock authorized by votes of company, . $325,000	
Capital stock issued (number of shares, 2,896); amount paid in, ...	$289,600 00
TOTAL AMOUNT PAID IN AS PER BOOKS OF THE CO., .	289,600 00
Total number of stockholders, ... 50	
Number of stockholders in Massachusetts, . . . 50	
Amount of stock held in Massachusetts, . . $289,600 00	

DEBT.

Funded debt, as follows: —	
Mortgage bonds due 1906, rate of interest 5 per cent., .	$246,000 00
Interest paid on same during year, . . $11,421 25	

NAME AND RESIDENCE OF OFFICERS.

Edwin Walden, *President*, Lynn, Mass. C. A. Hammond, *Superintendent*, Lynn, Mass. John A. Fenno, *Treasurer and Clerk of Corporation*, Newton, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Edwin Walden, Lynn, Mass. Amos F. Breed, Lynn, Mass. D. H. Sweetser, Lynn, Mass. Joseph W. Smith, Andover, Mass. Matthew Bolles, Boston, Mass. Isaac P. T. Edmands, Boston, Mass. Edw. Tyler, Boston, Mass. Jesse Tirrell, Boston, Mass. A. D. McClellan, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

BOSTON, WINTHROP & SHORE RAILROAD COMPANY,
BOSTON, MASS.

EDWIN WALDEN,
D. H. SWEETSER,
JESSE TIRRELL,
MATTHEW BOLLES,
JOSEPH W. SMITH,
EDW. TYLER,
ISAAC P. T. EDMANDS,
AMOS F. BREED,
Directors.

JOHN A. FENNO,
Treasurer.

CHAS. A. HAMMOND,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 31, 1888. Then personally appeared Edwin Walden, D. H. Sweetser, Jesse Tirrell, Matthew Bolles, Joseph W. Smith, Edw. Tyler, Isaac P. T. Edmands, Amos F. Breed and Chas. A. Hammond, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JOHN A. FENNO,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 31, 1888. Then personally appeared John A. Fenno, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

DAVID H. SWEETSER,
Justice of the Peace.

REPORT

OF THE

CENTRAL MASSACHUSETTS RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to the Boston & Lowell Railroad Company, and is operated by the Boston & Maine Railroad.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income: Rent for use of road,		$101,500 00
Total expense,		1,500 00
Net income,		100,000 00
Interest accrued during year:		100,000 00
On funded debt,	$100,000 00	
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,500 00
TOTAL EXPENSES,		$1,500 00
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Preferred stock, issued in exchange for mortgage debt of the Massachusetts Central Railroad Company,		$3,300 00
Common stock, issued in exchange for capital stock Massachusetts Central Railroad Company,		56,600 00
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		59,930 00

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$9,373,254 00
TOTAL ASSETS,		9,373,254 00
LIABILITIES.		
Capital stock: Preferred,	$3,922,754 00	
Common,	3,450,500 00	
		$7,373,254 00
Funded debt,		2,000,000 00
TOTAL LIABILITIES,		9,373,254 00

Description of Road.	
Main line of road from North Cambridge Junction to Northampton,	98.77 miles.
Main line of road in Massachusetts,	98.77 "
Total road belonging to this company,	98.77 "
Sidings and other tracks not above enumerated,	14.33 "
Same in Massachusetts,	14.33 "
Total Length of Track, computed as Single Track,	113.10 "
Same in Massachusetts,	113 10 "
Total length of steel rails in tracks, not including steel-top rails,	98.77 "
[Weights per yard, 60 pounds.]	

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When built.
Oakdale,	Lattice.	Timber.	98.0 feet.	1887.
Oakdale,	Stringer.	"	37.5 "	"
Oakdale,	"	"	37.5 "	"
Oakdale,	"	"	37.5 "	"
Oakdale,	"	"	76.0 "	"
Ware,	Lattice.	Iron.	85.0 "	"
Ware,	"	"	100.0 "	"
Ware,	"	"	166.0 "	"
Bondsville,	Truss.	Timber.	45.0 "	"
Belchertown,	"	"	45.0 "	"
Amherst,	Lattice.	Iron.	67.0 "	"

Bridges.	
Number of trestle bridges of 25 feet length and upwards,	12
Aggregate length of same for single track (2,412 feet).	
Number of spans of iron bridges of 25 feet and upwards,	55
Aggregate length of same for single track (5,018 feet).	
Number of spans of timber bridges of 25 feet and upwards,	11
Aggregate length of same for single track (428 feet).	
Number of crossings of highways at grade,	106
Number of crossings of highways over railroad,	23
Number of crossings of highways under railroad,	17
Number of highway bridges 18 feet above track,	22
Number of highway bridges less than 18 feet above track,	1
Height of lowest bridge above the rail,	16 feet.
Number of crossings at which gates or flagmen are maintained,	28
Number of crossings at which there are neither signals nor flagmen,	78
Number of railroad-crossings at grade (specifying each):	2
Old Colony Railroad, South Sudbury.	
Boston & Maine Railroad, Oakdale.	
Number of railroad-crossings over other railroads (specifying each):	8
Fitchburg Railroad, Hill's Crossing.	
Fitchburg Railroad, Hudson.	
Fitchburg Railroad, Waltham.	
Old Colony Railroad, West Berlin.	
Fitchburg Railroad, Holden.	
Boston & Albany Railroad, Gilbertville.	
Boston & Albany Railroad, Bondsville.	
New London, Northern Railroad, Belchertown.	

Capital Stock.		
Capital stock authorized by charter: Preferred,	$3,951,544 00	
Common,	3,500,000 00	
		$7,451,544 00
Capital stock authorized by votes of company: Preferred,	$3,951,544 00	
Common,	3,500,000 00	
		7,451,544 00
Capital stock issued (number of shares: Preferred, 38,964; common, 34,505); amount paid in,		7,346,900 00
Capital stock paid in on shares not issued (scrip),		26,354 00
Total Amount paid in, as per Books of the Co.,		7,373,254 00
Total number of stockholders: Preferred, 742; Common, 854	1,596	
Number of stockholders in Massachusetts: Preferred, 647; Common, 761	1,408	
Amount of stock held in Massachusetts: Preferred,	$3,571,800 00	
Common,	2,750,300 00	
	$6,322,100 00	
Debt.		
Funded debt, as follows: —		
Bonds due Oct. 1, 1906, rate of interest 5 per cent.,		$2,000,000 00
Interest paid on same during year,	$100,000 00	

Name and Residence of Officers.

Samuel N. Aldrich, *President*, Marlborough, Mass. George F. Seymour, *Treasurer and Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors last Elected.

Samuel N. Aldrich, Marlborough, Mass. Thomas H. Perkins, Boston, Mass. Henry Woods, Boston, Mass. Lyman Hollingsworth, Cohasset, Mass. J. Edwin Smith, Worcester, Mass. William T. Parker, Boston, Mass. Moses W. Richardson, Boston, Mass. Elisha S. Converse, Malden, Mass. Charles E. Sweet, Newton, Mass. William M. Gaylord, Northampton, Mass. Henry F. Hills, Amherst, Mass. Charles P. Darling, Newton, Mass.

Proper Address of the Company.

CENTRAL MASSACHUSETTS RAILROAD COMPANY,
Boston, Mass.

S. N. ALDRICH,
WILLIAM T. PARKER,
ELISHA S. CONVERSE,
CHARLES P. DARLING,
CHARLES E. SWEET,
L. HOLLINGSWORTH,
THOS. H. PERKINS,
HENRY WOOD,
Directors.

GEO. F. SEYMOUR,
Treasurer.

Commonwealth of Massachusetts.

Suffolk, ss. Nov. 10, 1888. Then personally appeared S. N. Aldrich, William T. Parker, Elisha S. Converse, Charles P. Darling, Charles E. Sweet and Geo. F. Seymour, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

EDWIN G. McINNES,
Justice of the Peace.

Suffolk, ss. Nov. 12, 1888. Then personally appeared L. Hollingsworth, Thos. H. Perkins and Henry Woods, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

EDWIN G. McINNES,
Justice of the Peace.

REPORT

OF THE

CHATHAM RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Old Colony Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$2,043 88
Total expense (including taxes),		367 37
Net income,		1,676 51
Interest accrued during year:		900 00
On funded debt,	$900	
Balance for the year (surplus),		776 51
Balance Sept. 30, 1888 (surplus),		776 51
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$125 00
Insurance,		10 50
Stationery and printing,		11 28
Contingencies and miscellaneous,		13 15
TOTAL OPERATING EXPENSES,		$159 93
Taxes,		207 47
TOTAL OPERATING EXPENSES AND TAXES,		$367 37
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Grading and masonry,		$7,102 47
Superstructure, including rails,		13,231 16
Land, land damages, and fences,		2,162 89
Passenger and freight stations, wood-sheds, and water-stations,		5,330 73
Engine-houses, car-sheds, and turn-tables,		3,216 80
Engineering, agencies, salaries, and other expenses during construction,		3,056 84
TOTAL FOR CONSTRUCTION,		$34,100 89
Other expenditures charged to property account: Storehouse,		600 50
TOTAL CHARGES TO PROPERTY ACCOUNTS,		$34,701 39
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		34,701 39

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$96,025 46	
Storehouse,	600 50	
TOTAL PERMANENT INVESTMENTS,		$96,625 96

Cash,	$2,345 55	
Debit balances,	5 00	
TOTAL CASH ASSETS,		$2,350 55
TOTAL ASSETS,		$98,976 51
LIABILITIES.		
Capital stock,		$68,200 00
Funded debt,		30,000 00
Profit & Loss balance,		776 51
TOTAL LIABILITIES,		$98,976 51
Present or Contingent Liabilities not included in the Balance Sheet.		
Other liabilities, viz.: Land damage,		$500 00
TOTAL (*not included in Balance Sheet*),		$500 00

DESCRIPTION OF ROAD.	
Main line of road from Chatham to Harwich,	7.00 miles.
Main line of road in Massachusetts,	7.00 "
Total road belonging to this company,	7.00 "
Sidings and other tracks not above enumerated,	1.00 "
Same in Massachusetts,	1.00 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	8.00 "
Same in Massachusetts,	8.00 "
Number of stations on all *roads owned* by this company,	5
Same in Massachusetts,	5
GENERAL INFORMATION.	
If road was first opened for operation during the past year, state the date:	Nov. 21, 1887
BRIDGES.	
Number of crossings of highways at grade,	12
Number of crossings at which there are neither signals nor flagmen,	12

CAPITAL STOCK.		
Capital stock authorized by charter,	$70,000 00	
Capital stock authorized by votes of company,	85,000 00	
Capital stock issued (number of shares, 682); amount paid in,		$68,200 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		68,200 00
Total number of stockholders,	128	
Number of stockholders in Massachusetts,	118	
Amount of stock held in Massachusetts,	$55,800	
DEBT.		
Funded debt, as follows: —		
First mortgage bonds due Nov. 1, 1902, rate of interest 6 per cent.,		$10,000 00
Interest paid on same during year,	$300 00	
First mortgage bonds due Nov. 1, 1907, rate of interest 6 per cent.,		20,000 00
Interest paid on same during year,	$600 00	

NAME AND RESIDENCE OF OFFICERS.

Marcellus Eldredge, *President*, Portsmouth, N. H. Charles Bassett, *Treasurer and Clerk of Corporation*, South Chatham, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Marcellus Eldredge, Portsmouth, N. H. Osborn Nickerson, Chathamport, Mass. Alvin Z. Atkins, North Chatham, Mass. Collins Howes, Chatham, Mass. Charles Bassett, South Chatham, Mass.

PROPER ADDRESS OF THE COMPANY.

CHATHAM RAILROAD COMPANY,
CHATHAM, MASS.

ALVIN Z. ATKINS,
COLLINS HOWES,
OSBORN NICKERSON,
Directors.
CHAS. BASSETT,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

BARNSTABLE COUNTY, ss. CHATHAM, Nov. 1, 1888. Then personally appeared Alvin Z. Atkins, Collins Howes, Osborn Nickerson, Directors, and Charles Bassett, Director and Treasurer, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

GEORGE GODFREY,
Justice of the Peace.

REPORT

OF THE

CHESHIRE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$611,036 01
Total expense (including taxes),		417,272 78
Net income,		193,763 23
Rentals:		51,000 00
Fitchburg Railroad, for Vt. and Mass. Div.,	$51,000 00	
Interest accrued during year:		48,000 09
On funded debt,	$48,000 00	
Dividends declared (6 per cent.),		126,000 00
Balance for the year (deficit),		31,236 77
Balance at commencement of year,		89,791 75
Balance Sept. 30, 1888 (surplus),		58,554 98
ANALYSIS OF EARNINGS.		
From local passengers,		$51,326 00
through passengers (to and from other roads),		123,555 77
express and extra baggage,		7,500 00
mails,		9,500 04
other sources, passenger department,		7,500 00
Total earnings from passenger department,		199,381 81
From local freight,		22,912 56
through freight (to and from other roads),		364,525 95
Total earnings from freight department,		387,438 51
TOTAL TRANSPORTATION EARNINGS,		586,820 32
Income from all other sources, viz.:		24,215 69
Interest,	$12,355 51	
Rents, lands, houses, etc.,	11,860 18	
TOTAL INCOME FROM ALL SOURCES,		611,036 01
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$16,470 29
Legal expenses,		252 50
Insurance,		1,773 13
Stationery and printing,		2,641 70
Outside agencies and advertising,		4,438 04
Contingencies and miscellaneous,		4,280 26
Repairs of bridges (including culverts and cattle-guards),		2,967 19
Repairs of buildings,		9,747 84
Repairs of fences, road-crossings and signs,		1,324 73

Renewal of rails,	$6,635 34
[Number tons steel laid, 220.]	
Renewal of ties,	11,801 70
[Number laid, 30,429]	
Repairs of road-bed and track,	37,772 23
Repairs of locomotives,	23,382 67
Fuel for locomotives,	84,538 89
[Tons of coal, 19,582; cords of wood, 630½.]	
Water supply,	839 94
Oil and waste,	5,555 34
Locomotive service,	35,987 14
Repairs of passenger-cars,	12,657 15
Passenger-train service,	10,830 22
Passenger-train supplies,	913 01
Mileage passenger-cars,	2,701 72
Repairs of freight-cars,	17,416 93
Freight-train service,	30,308 62
Freight-train supplies,	1,622 12
Mileage freight-cars,	20,200 99
Telegraph expenses,	3,935 59
Loss and damage, freight and baggage,	264 68
Loss and damage, property and cattle,	90 00
Personal injuries,	690 71
Agents and station service,	31,818 78
Station supplies,	5,652 25
TOTAL OPERATING EXPENSES,	$389,511 70
Taxes,	27,761 08
TOTAL OPERATING EXPENSES AND TAXES,	$417,272 78

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.

Grading and masonry,	$1,500 00
Bridging,	1,000 00
Superstructure, including rails,	7,531 96
Land, land damages and fences,	3,361 72
Engine houses, car sheds and turn-tables,	2,201 28
TOTAL FOR CONSTRUCTION,	15,594 96
Passenger (one), mail and baggage cars,	5,000 00
Freight (ten) and other cars,	4,000 00
TOTAL FOR EQUIPMENT,	9,000 00
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,	24,594 96

Balance Sheet Sept. 30, 1888.

ASSETS.

Cost of road,	$2,410,863 90	
Cost of equipment,	331,266 32	
TOTAL PERMANENT INVESTMENTS,		$2,742,130 22
Cash,	$1,642 84	
Bills receivable,	224,017 19	
Due from agents and companies,	41,661 89	
Materials and supplies,	111,202 10	
TOTAL CASH ASSETS,		378,524 02
TOTAL ASSETS,		$3,120,654 24

Liabilities.		
Capital stock,		$2,153,300 00
Funded debt,		800,000 00
Unfunded debt, viz :		108,799 26
Interest unpaid (including January, 1889, bond coupons),	$25,470 00	
Dividends unpaid,	975 00	
Notes payable,	82,000 00	
Vouchers and accounts,	354 26	
Profit & Loss balance,		58,554 98
Total Liabilities,		$3,120,654 24

Mileage, Traffic, etc.	
Passenger-train mileage,	165,653
Freight-train mileage,	344,608
Total Revenue-Train Mileage,	510,261
Switching-train mileage,	66,629
Other train mileage,	24,043
Total Train Mileage,	600,933
Number of season-ticket passengers,	7,550
Number of local passengers (including season),	107,956
Number of through passengers (to and from other roads),	97,125
Total Number of Passengers carried,	205,081
Local passenger mileage (local passengers carried one mile),	1,890,433
Through passenger mileage (through passengers carried one mile),	4,063,968
Total Passenger Mileage,	5,954,401
Number tons local freight,	23,038
Number tons through freight (to and from other roads),	578,683
Total Number Tons Freight carried,	601,721
Local freight mileage (tons local freight carried one mile),	516,820
Through freight mileage (tons through freight carried one mile),	31,171,078
Total Freight Mileage,	31,687,898
Average weight of passenger-trains (exclusive of passengers),	95 tons.
Average number of cars in passenger-trains,	5
Average weight of freight-trains (exclusive of freight),	350
Average number of cars in freight-train,	30
Average number of persons employed,	373

Description of Road.	
Main line of road from Bellows Falls to Ashburnham Junction,	53.62 miles.
Main line of road in Massachusetts,	10.81 "
Main line of road in New Hampshire,	42.81 "
Total road belonging to this company,	53.62 "
Sidings and other tracks not above enumerated,	17.29 "
Same in Massachusetts,	3.17 "
Total Length of Track, computed as Single Track,	70.91 "
Same in Massachusetts,	13.98 "
Total length of steel rails in tracks, not including steel-top rails,	53.62 "
[Weights per yard, 60 to 72 pounds]	
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Monadnock Railroad, length,	15 82 miles.
Vt. and Mass. Div. Fitchburg Railroad, length,	10.39 "
Total length of above roads,	26.21 "
Total length of above roads in Massachusetts,	12.46 "

Total length of above roads in other States (specifying each): —	
New Hampshire, length,	13.75 miles.
Total miles of road operated by this company (not including Monadnock Railroad),	64.01 "
Total miles of road operated by this company in Massachusetts,	21.20 "
Number of stations in Massachusetts on all *roads operated* by this company,	7
Number of telegraph offices in same,	7
Number of stations on all *roads owned* by this company,	16
Same in Massachusetts,	3
Equipment.	
Number of locomotives,	30
Number of passenger-cars,	26
Number of baggage, mail and express cars,	11
Number of freight-cars (basis of 8 wheels),	463
Number of other cars,	32
General Information.	
Maximum weight of locomotives in working order,	48 tons.
Average weight of locomotives in working order,	34 "
Maximum weight of tenders full of fuel and water,	25 "
Average weight of tenders full of fuel and water,	19 "
Maximum weight of passenger-cars,	20 "
Average weight of passenger-cars,	18 "
Average weight of mail and baggage cars,	13½ "
Average weight of 8-wheel box freight-cars,	9½ "
Average weight of 8-wheel platform-cars,	7½ "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	46½ feet.
Total length of heaviest engine and tender over all,	55 "
What telegraph companies own a line on your right of way, and how many miles does each own? Western Union, whole road,	53.62 miles.
Number of miles of road *operated* by your company not furnished with telegraph facilities: —	
From Peterborough, N. H., to Winchendon, Mass.,	15.82 "
Are charges for the transportation of company's supplies included in the earnings as reported for your road? Yes.	
If so, state at what rates; the number of tons carried; and the amount credited to earnings: ½ cent per ton per mile, 16,480 tons — $3,220.00.	
Bridges.	
Number of spans of timber bridges of 25 feet and upwards,	5
Number of crossings of highways at grade,*	9
Number of crossings at which gates or flagmen are maintained,	1
Number of crossings at which there are neither signals nor flagmen,*	8
Number of railroad crossings at grade (specifying each),* Ware River Railroad.	1
Rates of Fare, etc.	
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	3.5 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	3.4 "
Average rate of fare per mile for season-ticket passengers,	1.2 "

* In Massachusetts, on miles road owned.

Average rate of fare per mile *received* from *all* passengers,		2.9 cents.
Average rate of local freight per ton per mile,		5.0 "
Average rate of freight per ton per mile *received* from freight to and from other roads,		1.7 "
Average rate of freight per ton per mile *received* from *all* freight,		1.223 "
Capital Stock.		
Capital stock authorized by charter,	$2,250,000 00	
Capital stock authorized by votes of company,	2,153,300 00	
Capital stock issued (number of shares, 21,533); amount paid in,		$2,153,300 00
Total Amount paid in, as per Books of the Co,		2,153,300 00
Total number of stockholders,	465	
Number of stockholders in Massachusetts,	378	
Amount of stock held in Massachusetts,	$1,602,700 00	
Debt.		
Funded debt, as follows: —		
Bonds due July 1, 1896, rate of interest 6 per cent.,		$250,000 00
Interest paid on same during year,	$15,000 00	
Bonds due July 1, 1898, rate of interest 6 per cent.,		550,000 00
Interest paid on same during year,	$33,000 00	
Total Amount of Funded Debt,		$800,000 00

Name and Residence of Officers.

Wm. A. Russell, *President*, Boston, Mass. Edward C. Thayer, *Vice-President*, Keene, N. H. R. Stewart, *General Manager*, Keene, N. H. J. W. Dodge, *General Freight Agent*, Keene, N. H. F. H. Kingsbury, *General Passenger Agent and Treasurer*, Keene, N. H. R. Stewart, *Clerk of Corporation*, Keene, N. H.

Name and Residence of Directors last Elected.

Wm. A. Russell, Boston, Mass. Geo. W. Russell, Boston, Mass. R. M. Pulsifer,* Boston, Mass. H. W. Suter, Boston, Mass. Edward C. Thayer, Keene, N. H. A. B. Turner, Ashuelot, N. H. Wm. H. Hill, Jr., Boston, Mass.

Proper Address of the Company.

CHESHIRE RAILROAD COMPANY,
Keene, N. H.

WM. A. RUSSELL,
EDWARD C. THAYER,
G. W. RUSSELL,
WILLIAM H. HILL,
H. W. SUTER,
Directors.

F. H. KINGSBURY,
Treasurer.

R. STEWART,
Superintendent.

* Deceased.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 19, 1888. Then personally appeared Wm. A. Russell, E. C. Thayer, H. W. Suter, Geo. W. Russell, Wm. H. Hill, R. Stewart and F. H. Kingsbury, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

J. M. WHEATON,
Justice of the Peace.

REPORT

OF THE

CHELSEA BEACH RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is virtually owned by the Eastern Railroad Company, and its operations are included in the return of the Boston & Maine Railroad. The Chelsea Beach Railroad, having been operated by the Eastern Railroad Company, is now leased to the Boston & Maine Railroad under date of Dec. 2, 1884.]

Balance Sheet Sept. 30, 1888.

ASSETS.	
Cost of road,	$38,310 52
TOTAL ASSETS,	$38,310 52
LIABILITIES.	
Capital stock,	$38,300 00
Profit & Loss balance,	10 52
TOTAL LIABILITIES,	$38,310 52

DESCRIPTION OF ROAD.	
Main line of road from Oak Island to Saugus River Junction,	1.78 miles.
Main line of road in Massachusetts,	1.78 "
Total road belonging to this company,	1.78 "
Sidings and other tracks not above enumerated,	.54 "
Same in Massachusetts,	.54 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	2.32 "
Same in Massachusetts,	2.32 "
Total length of steel rails in tracks, not including steel-top rails,	.97 "
[Weights per yard, 58 and 67 pounds.]	
Number of stations on all *roads owned* by this company,	1
Same in Massachusetts,	1
BRIDGES.	
Number of trestle bridges of 25 feet length and upwards,	2
Aggregate length of same for single track (562 feet).	
Number of spans of timber bridges of 25 feet and upwards,	1
Aggregate length of same for single track (27 feet).	

CAPITAL STOCK.		
Capital stock authorized by charter,	$10,000 00	
Capital stock authorized by votes of company,	38,300 00	
Capital stock issued (number of shares, 383); amount paid in,		$38,300 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		38,300 00
Total number of stockholders,	1	
Number of stockholders in Massachusetts,	1	
Amount of stock held in Massachusetts,	$38,300 00	

NAME AND RESIDENCE OF OFFICERS.

Samuel C. Lawrence, *President*, Medford, Mass. Edward Lesley, *Auditor*, Newburyport, Mass. N. G. Chapin, *Treasurer*, Brookline, Mass. F. I. Amory, *Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Samuel C. Lawrence, Medford, Mass. Walter Hunnewell, Wellesley, Mass. Arthur Sewall, Bath, Me. Frank Jones, Portsmouth, N. H. Nath'l J. Bradlee, Boston, Mass. Samuel C. Cobb, Boston, Mass. J. Endicott Peabody, Salem, Mass. Jarvis D. Braman, Boston, Mass. Joseph H. Gray, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

CHELSEA BEACH RAILROAD COMPANY,
BOSTON, MASS.

SAMUEL C. LAWRENCE,
FRANK JONES,
ARTHUR SEWALL,
WALTER HUNNEWELL,
SAM'L C. COBB,
S. E. PEABODY,
JOSEPH H. GRAY,
Directors.
N. G. CHAPIN,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. NOV. 28, 1888. Then personally appeared N. G. Chapin, treasurer of the Chelsea Beach Railroad, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

ROBERT S. COVELL,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Dec. 4, 1888. Then personally appeared Sam'l C. Lawrence (Nov. 28, '88), Sam'l C. Cobb (Dec. 1, '88), Joseph H. Gray, S. E. Peabody, Frank Jones (Dec. 3, '88) and Walter Hunnewell, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. E. A. BARTLETT,
Justice of the Peace.

REPORT

OF THE

CONNECTICUT RIVER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$1,035,669 25
Total expense (including taxes),		790,217 42
Net income,		245,451 83
Rentals:		24,234 97
Ashuelot Railroad Company,	$20,337 63	
Fitchburg Railroad Company,	564 02	
Boston & Albany Railroad Company,	3,333 32	
Interest accrued during year:		23,216 86
On other debt,	$23,216 86	
Dividends declared (8 per cent.),		198,000 00
Balance at commencement of year,		987,986 92
Deduct: Sundry vouchers,	$28 50	
Balance at commencement of year as so changed,		987,958 42
Balance Sept. 30, 1888 (surplus),		987,958 42
ANALYSIS OF EARNINGS.		
From local passengers,		$308,339 98
through passengers (to and from other roads),		132,139 29
express and extra baggage,		18,500 00
mails,		12,605 87
Total earnings from passenger department,		471,585 14
From local freight,		123,741 40
through freight (to and from other roads),		391 910 65
Total earnings from freight department,		515,652 05
TOTAL TRANSPORTATION EARNINGS,		987,237 19
Income from all other sources, viz.:		48,432 06
Rents,	$10,487 76	
Rent of equipment,	10,130 94	
Interest,	27,813 36	
TOTAL INCOME FROM ALL SOURCES,		$1,035,669 25
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$31,016 90
Legal expenses,		1,890 68
Insurance,		2,569 25
Stationery and printing,		8,784 49
Outside agencies and advertising,		1,846 10
Contingencies and miscellaneous,		3,413 28
Repairs of bridges (including culverts and cattle-guards),		35,777 11
Repairs of buildings,		31,576 34
Repairs of fences, road-crossings and signs,		3,930 43
Renewal of rails,		19,976 87
[Number tons steel laid, $863\frac{1608}{2240}$.]		
Renewal of ties,		26,768 70
[Number laid, 64,459.]		

Repairs of road-bed and track,	$118,536 66
Repairs of locomotives,	36,805 47
Fuel for locomotives,	73,790 32
[Tons of coal, 13,515; cords of wood, 600.]	
Water supply,	4,124 32
Oil and waste,	4,380 97
Locomotive service,	45,578 20
Repairs of passenger-cars,	63,355 84
Passenger-train service,	26,685 91
Passenger-train supplies,	1,158 23
Repairs of freight-cars,	49,355 40
Freight-train service,	26,958 18
Freight-train supplies,	875 91
Mileage freight-cars (credit entry),	1,621 15
Telegraph expenses,	616 93
Loss and damage, freight and baggage,	8,799 55
Loss and damage, property and cattle,	713 77
Personal injuries,	5,069 67
Agents and station service,	83,301 70
Station supplies,	8,743 37
TOTAL OPERATING EXPENSES,*	$724,779 40
Taxes,	65,438 02
TOTAL OPERATING EXPENSES AND TAXES,	$790,217 42
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.	
Grading and masonry,	$24,921 59
Bridging,	130,687 24
Superstructure, including rails,	17,407 66
Land, land damages, and fences,	5,011 18
Passenger and freight stations, wood-sheds, and water-stations,	2,785 25
Engine-houses, car-sheds, and turn-tables,	1,050 23
TOTAL FOR CONSTRUCTION,	181,863 15
Locomotives (number, 1),	8,350 00
Passenger, mail, and baggage cars (number, 6),	29,498 40
Freight and other cars (number, 40),	18,996 00
TOTAL FOR EQUIPMENT,	56,844 40
TOTAL CHARGES TO PROPERTY ACCOUNTS,	$238,707 55
Property sold (or reduced in valuation on the books) and credited property accounts during the year: Reduction in accounts.	
Total credits to property accounts,	134,591 55
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,	104,116 00

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$2,968,908 89	
Cost of equipment,	436,681 14	
Stock of Vermont Valley R. R. Co. of 1871,	99,610 00	
Stock of Ashuelot Railroad Co.,	210,000 00	
TOTAL PERMANENT INVESTMENTS,		$3,715,200 03

* Includes $56,844.40 transferred from equipment account, $76,400.52 from construction account, and $7,917.12 on account loss and damage from fire at Chicopee.

Cash,	$26,824 54	
Bills receivable,	71,387 26	
Due from agents and companies,	515,532 37	
Materials and supplies,	103,219 70	
Debit balances,	18,033 93	
TOTAL CASH ASSETS,		$734,997 80
TOTAL ASSETS,		$4,450,197 83

LIABILITIES.

Capital stock,		$2,580,000 00
Unfunded debt, viz.:		882,239 41
Dividends unpaid,	$53,458 00	
Notes payable,	549,000 00	
Vouchers and accounts,	279,781 41	
Profit & Loss balance,		987,958 42
TOTAL LIABILITIES,		$4,450,197 83

Present or Contingent Liabilities not included in the Balance Sheet.

Bonds guaranteed by this company or a lien on its road, viz.:

Interest guaranteed on $80,000 of stock of the Vermont Valley Railroad Company of 1871.

MILEAGE, TRAFFIC, ETC.

Passenger-train mileage,	354,412
Freight-train mileage,	150,473
TOTAL REVENUE-TRAIN MILEAGE,	504,885
Switching-train mileage,	145,791
Other train mileage,	22,009
TOTAL TRAIN MILEAGE,	672,685
Number of season-ticket passengers,	399,279
Number of local passengers (including season),	1,557,209
Number of through passengers (to and from other roads),	193,163
TOTAL NUMBER OF PASSENGERS CARRIED,	1,750,372
Local passenger mileage (local passengers carried one mile),	13,229,217
Through passenger mileage (through passengers carried one mile),	4,922,501
TOTAL PASSENGER MILEAGE,	18,151,718
Number tons local freight,	176,040
Number tons through freight (to and from other roads),	622,969
TOTAL NUMBER TONS FREIGHT CARRIED,	799,009
Local freight mileage (tons local freight carried one mile),	2,929,783
Through freight mileage (tons through freight carried one mile),	16,536,641
TOTAL FREIGHT MILEAGE,	19,466,424
Average weight of passenger-trains (exclusive of passengers),	184,000 lbs.
Average number of cars in passenger-trains,	4
Average weight of freight-trains (exclusive of freight),	650,000 lbs.
Average number of cars in freight-train,	35
Average number of persons employed,	592

DESCRIPTION OF ROAD.

Main line of road from Springfield, Mass., to South Vernon, Vt.,	50.00 miles.
Main line of road in Massachusetts,	50.00 "
Double track on main line,	36.00 "
Same in Massachusetts,	36.00 "

Branches owned by company, viz.:	
Chicopee to Chicopee Falls (single track),	2.35 miles.
Mount Tom to Easthampton (single track),	3.50 "
Total length of branches owned by company,	5.85 "
Total length of branches owned by company in Massachusetts,	5.85 "
Total road belonging to this company,	55.85 "
Sidings and other tracks not above enumerated,	43.68 "
Same in Massachusetts,	43.68 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	135 53 "
Same in Massachusetts,	135.53 "
Total length of steel rails in tracks, not including steel-top rails,	125 03 "
[Weights per yard, 56 and 66 pounds.]	
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Ashuelot Railroad, length,	24 00 miles.
Total length of above road,	24.00 "
Total length of above road in Massachusetts,	.0757+ "
Total length of above road in other States (specifying each),	23.9242+ "
Vermont,	0.71 "
New Hampshire,	23.2142+ "
Total miles of road operated by this company,	79.85 "
Total miles of road operated by this company in Massachusetts,	55.9257+ "
Number of stations in Massachusetts on all *roads operated* by this company,	19
Number of telegraph offices in same,	11
Number of stations on all *roads owned* by this company,	20
Same in Massachusetts,	19
EQUIPMENT.	
Number of locomotives (including ten leased under contract of sale to the Vermont Valley Railroad Co. of 1871),	43
Number of passenger-cars,	39
Number of baggage, mail and express cars,	4
Number of combination cars,	16
Number of freight-cars (basis of 8 wheels),	551
Number of other cars,	47

LIST OF ACCIDENTS.

	FROM CAUSES BEYOND THEIR OWN CONTROL (IN MASSACHUSETTS).		FROM THEIR OWN MISCONDUCT OR CARELESSNESS (IN MASSACHUSETTS).		TOTAL IN MASSACHUSETTS.		TOTAL ON WHOLE ROAD OPERATED.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	1	-	1	-	1	-
Employees,	4	1	5	4	9	5	9	5
Others,	-	-	2	5	2	5	2	5

STATEMENT OF EACH ACCIDENT IN MASSACHUSETTS.

Oct. 10, 1887. — Edward Dakill, by collision with train at Russell Street crossing in Greenfield. Wagon broken; personal injuries very slight.

November 16. — John Welch, a boy twelve years of age, while stealing a ride in an empty box freight-car with some companions on the Holyoke yard switch-train, jumped out of the car, and fell on the track in such a way that the train ran over his leg and crushed it.

December 5. — Edgar J. Russ, brakeman on train 27, in attempting to jump onto a moving engine at Greenfield in the night-time, missed the step, fell under the wheels, and was instantly killed.

December 17. — Conductor E. A. Sawin of the Holyoke yard switch-train was injured about the face by the sliding of a load of lumber on a flat car which was being "shunted." This car struck a box car standing upon a spur track, and the lumber partially slid on Sawin, who was at the brake on the car of lumber. He resumed work in about two months.

December 19. — James Coleman, a citizen of South Deerfield, got between the track and the platform of the freight-house at that place as a freight-train was switching there. He was frequently cautioned as to his dangerous position, and was told to leave that spot. This he neglected to do, for some unexplained reason, and was caught between the train and the platform, and so badly crushed that he died.

December 27. — As train 42 was leaving the Brightwood station, A. Ballou, employed by the Wason Manufacturing Company, attempted to board the train after it was in motion; in one hand he held a package. He lost or missed his hold of the hand-rail of the car, and fell under the cars, and one ankle was crushed.

Jan. 21, 1888. — John Regan, brakeman on No. 5 freight-train, lost two fingers coupling cars in Greenfield yard. The cars were a Passumpsic double head drawbar, and a Grand Trunk single head drawbar.

January 27. — James Kennedy, John Shea, Michael Connor, Martin Griffin, employees, were killed in Jones Cut, near Holyoke, by collision with train No. 12. The railroad was blocked with snow at that point, and a severe snow-storm was prevailing, accompanied with heavy gusts of wind, so that the approaching train could not be easily seen or heard. Some seventy men were also at work with these men, shovelling snow. The gang of men were warned of the approach of train No 12, and got out of the way, with the exception of the four named above. They did not heed or hear the warning in time, and remained upon the track, and were struck and killed by the engine.

February 1. — Lewis Bascom, brakeman on the Springfield yard switch-train, while coupling cars, 638 Connecticut River, common bunter, and 421 N. H. & N., janney bunter, had his hand caught and badly jammed, several of the small bones being broken.

February 25. — W. A. Doolittle, brakeman on the Chicopee Falls freight-train, while going up the ladder of a box freight-car at Chicopee Junction, lost his hold and fell between the cars onto the rails, and was run over and instantly killed. The car and ladder were in good working condition.

March 27. — Charles Rourke, brakeman on the Greenfield yard switch-train, while passing over the top of a train of cars, slipped from some unexplained cause, and fell between the cars, which passed over his body, instantly killing him.

April 6. — James Butler, residence unknown, while walking on the railroad just above Holyoke, outside of the west rail of the west track, partially intoxicated, was struck by the engine of No. 36 train at midnight. His severest injuries seemed to result from a bottle in his pocket, which was broken by the collision. He was detained several weeks at the House of Providence in Holyoke.

April 6. — Peter Hogan, brakeman on the Springfield yard switch-train, while coupling a Morris refrigerator car, common bunter, and Pennsylvania car, skeleton bunter, was caught between the ends of the cars, and his body was squeezed. His injuries were not severe.

April 16. — Joseph Winn of South Adams, while stealing a ride on No. 28 freight-train as it was leaving the Greenfield yard, was seen on the cars with two companions, by the brakeman, when the train started, and he and his companions were told to get off, which Winn's companions did safely. Winn, in jumping off, fell, and his hands and forearm were caught and run over by the wheels, making amputation necessary.

July 10. — George Rennie, brakeman on the Holyoke yard switch-train, in attempting to get upon a moving car from the platform at the Holyoke paper-mill, was caught between the coal shed and the car, and injured in the thighs. He recovered from these injuries in two or three months.

July 30. — John F. Ragan, brakeman on No. 5 freight-train, while going up the ladder on a box freight-car at Greenfield station, lost his hold or footing, from some unexplained cause, and fell between the cars, which passed over his body, instantly killing him. The ladder and other parts of the car were in good working condition.

August 1. — Patrick Coughlin of Northampton, 60 years of age, was walking on the track, and stopped to look at some workmen on the new iron bridge at Northampton, and while standing on the abutment was struck by the engine of No. 11 train and thrown some twenty feet, receiving injuries from which he died in two or three hours. The usual warning signals were given.

August 14. — John Maher, brakeman on the Holyoke yard switch-train, while walking along with the train in between the cars to pull the coupling pin, missed his footing in some way and fell beneath the cars, and was run over and instantly killed. The road at this point was in proper condition.

September 15. — James Collins, passenger on No. 35 train, fell off the train when about two miles north of Chicopee Junction, striking on his head, and instantly killing him. Was partially intoxicated at the time, and went out upon the platform of the car, against the protests of the train-men.

General Information.	
Maximum weight of locomotives in working order,	83 940 lbs.
Average weight of locomotives in working order,	63.581 "
Maximum weight of tenders full of fuel and water,	60.280 "
Average weight of tenders full of fuel and water,	42.400 "
Maximum weight of passenger-cars,	51.400 "
Average weight of passenger-cars,	42.956 "
Average weight of mail and baggage cars,	44.443 "
Average weight of 8-wheel box freight-cars,	21.000 "
Average weight of 8-wheel platform-cars,	17.000 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	43 ft. 9 in.

Total length of heaviest engine and tender over all,	53 ft.
What telegraph companies own a line on your right of way, and how many miles does each own?	Western Union.
Are charges for the transportation of company's supplies included in the earnings as reported for your road?	Yes.
If so, state at what rates; the number of tons carried; and the amount credited to earnings.	One-fourth of fourth class.

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When Built.
Northampton,	Riveted Lattice.	Iron.	100 feet.	1888.
Mount Tom,	" "	"	129 "	"
Holyoke (two),	" "	"	154 "	"
			342 "	1887-88.
Chicopee,	" "	"	129 "	1888.

Bridges.

Number of spans of stone bridges of 25 feet and upwards,*	2
Number of spans of iron bridges of 25 feet and upwards,*	23
Number of spans of timber bridges of 25 feet and upwards,*	1
Number of crossings of highways at grade,*	50
Number of crossings of highways over railroad,	6
Number of crossings of highways under railroad,	5
Number of highway bridges 18 feet above track,	6
Height of lowest bridge above the rail,	18 ft.
Number of crossings at which gates or flagmen are maintained,	6
Number of crossings at which electric signals are maintained,*	6
Number of crossings at which there are neither signals nor flagmen,*	34
Number of railroad-crossings over other railroads (specifying each):*	3
One at Holyoke.	
One at Deerfield.	
One at Cheapside.	

Rates of Fare, etc.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.33 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.68 "
Average rate of fare per mile for season-ticket passengers,	.96 "
Average rate of fare per mile *received* from *all* passengers,	2.42 "
Average rate of local freight per ton per mile,	4.22 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	2.37 "
Average rate of freight per ton per mile *received* from *all* freight,	2 65 "

Capital Stock.

Capital stock authorized by charter,	$2,670,000 00	
Capital stock authorized by votes of company,	2,580,000 00	
Capital stock issued (number of shares, 25,800); amount paid in,		$2,580,000 00
Total Amount paid in as per Books of the Co.,		2,580,000 00
Total number of stockholders,	976	
Number of stockholders in Massachusetts,	774	
Amount of stock held in Massachusetts,	$2,021,800 00	

* In Massachusetts, on miles road owned.

NAME AND RESIDENCE OF OFFICERS.

N. A. Leonard, *President*, Springfield, Mass. W. H. Wilson, *Auditor*, Springfield, Mass. J. Mulligan, *Superintendent*, Springfield, Mass. H. E. Howard, *General Freight Agent*, Springfield, Mass. E. C. Watson, *General Ticket Agent*, Springfield, Mass. Seth Hunt, *Treasurer and Clerk of Corporation*, Springfield, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

N. A. Leonard, Springfield, Mass. Oscar Edwards, Northampton, Mass. F. H. Harris, Springfield, Mass. Charles S. Sargent, Brookline, Mass. Wm. R. Cone, Hartford, Conn. A. B. Harris, Springfield, Mass. Frederick Billings, Woodstock, Vt. Aug. T. Perkins, Barnstable, Mass. William Whiting, Holyoke, Mass.

PROPER ADDRESS OF THE COMPANY.

CONNECTICUT RIVER RAILROAD COMPANY,
SPRINGFIELD, MASS.

N. A. LEONARD,
OSCAR EDWARDS,
WM. WHITING,
WM. R. CONE,
F. H. HARRIS,
Directors.
SETH HUNT,
Treasurer.
J. MULLIGAN,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

HAMPDEN, SS. SPRINGFIELD, Nov. 4, 1888. Then personally appeared N. A. Leonard, Oscar Edwards, William Whiting, Wm. R. Cone, F. H. Harris, Seth Hunt and J. Mulligan, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

G. E. FRINK,
Justice of the Peace.

REPORT

OF THE

DANVERS RAILROAD,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Maine Railroad. Its operations are included in the report of that road, its business being so intimately connected that separate accounts have not been kept.]

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$244,456 02
TOTAL ASSETS,		$244,456 02
LIABILITIES.		
Capital stock,		$67,500 00
Funded debt,		150,000 00
Unfunded debt, viz.:		26,956 02
Vouchers and accounts,	$26,956 02	
TOTAL LIABILITIES,		$244,456 02

DESCRIPTION OF ROAD.	
Main line of road from Wakefield Junction to Danvers,	9.259 miles.
Main line of road in Massachusetts,	9.259 "
Total road belonging to this company,	9.259 "
Sidings and other tracks not above enumerated,	1.289 "
Same in Massachusetts,	1.289 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	10 548 "
Same in Massachusetts,	10 548 "
Total length of steel rails in tracks, not including steel-top rails,	9.259 "
[Weights per yard, 60 pounds.]	
Number of stations on all *roads owned* by this company,	8
Same in Massachusetts,	8
BRIDGES.	
Number of crossings of highways at grade,	20
Number of crossings of highways over railroad,	1
Number of crossings of highways under railroad,	2
Number of highway bridges less than 18 feet above track,	1
Height of lowest bridge above the rail,	15 feet.
Number of crossings at which gates or flagmen are maintained,	7
Number of crossings at which electric signals are maintained,	1
Number of crossings at which there are neither signals nor flagmen,	12
Number of railroad crossings at grade (specifying each):	2
Southern Division Boston & Maine R. R. at West Peabody.	
Eastern Division Boston & Maine R. R. at Danvers.	

CAPITAL STOCK.		
Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock issued (number of shares, 583); amount paid in,		$58,300 00
Capital stock paid in on shares not issued,		9,200 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		67,500 00
Total number of stockholders,	48	
Number of stockholders in Massachusetts,	46	
Amount of stock held in Massachusetts,	$45,500 00	
DEBT.		
Funded debt, as follows: —		
Bonds,		$150,000 00

NAME AND RESIDENCE OF OFFICERS.

George C. Lord, *President*, Newton, Mass. Jas. T. Furber, *General Manager*, Lawrence, Mass. Wm. J. Hobbs, *Auditor*, Malden, Mass. Wm. Merritt, *Superintendent*, Boston, Mass. W. J. C. Kenney, *General Freight Agent*, Danvers, Mass. D. J. Flanders, *General Passenger Agent*, Malden, Mass. Amos Blanchard, *Treasurer*, Andover, Mass. Chauncy P. Judd, *Clerk of Corporation*, Reading, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

George C. Lord, Newton, Mass. Amos Paul, South Newmarket, N. H. Nath'l J. Bradlee, Boston, Mass. Wm. S. Stevens, Dover, N. H. Jas. R. Nichols,* Haverhill, Mass. Jos. S. Ricker, Deering, Me. Sam'l C. Lawrence, Medford, Mass.

PROPER ADDRESS OF THE COMPANY.

DANVERS RAILROAD, BOSTON, MASS.

GEORGE C. LORD,
NATH'L J. BRADLEE,
AMOS PAUL,
RICHARD OLNEY,
SAMUEL C. LAWRENCE,
Directors.
AMOS BLANCHARD,
Treasurer.
JAS. T. FURBER,
General Manager.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 1, 1888. Then personally appeared George C. Lord, Nathaniel J. Bradlee, Amos Paul, Richard Olney, Samuel C. Lawrence, Amos Blanchard and James T. Furber, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

C. P. JUDD,
Justice of the Peace.

* Deceased.

REPORT

OF THE

EASTERN RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Maine Railroad.]

GENERAL EXHIBIT FOR THE YEAR.			
Total income,			$875,427 52
Total expense,			14,367 91
Net income,			861,059 61
Interest accrued during year:			643,041 02
On funded debt,		$601,536 82	
On land mortgage notes,		40,548 00	
On other debt,		956 20	
Paid trustees of sinking fund,			100,000 00
Dividends declared, (6 per cent.) on preferred stock,		$188,973 00	
Dividends declared, ($4\frac{1}{2}$ per cent.) on common stock,		224,892 00	440,820 00
Dividends declared, ($4\frac{1}{2}$ per cent.) on Portsmouth, Great Falls & Conway R. R. stock,		26,955 00	
Balance for the year (deficit),			322,801 41
Balance at commencement of year,		$619,767 77	
Add: —			
Interest,	$276 50		
Fund for redemption of mortgage debt,	101 49		
		377 99	
		$620,145 76	
Deduct: —			
Advances Portsmouth, Great Falls & Conway Railroad,	$119 88		
Chelsea Beach Construction,	10 52		
		130 40	
Balance at commencement of year as so changed,			620,015 36
Balance Sept. 30, 1888 (surplus),			297,213 95
ANALYSIS OF EARNINGS.			
Rents for use of road,			$871,452 75
Income from all other sources, viz.:			3,974 77
Interest,		$3,974 77	
TOTAL INCOME FROM ALL SOURCES,			$875,427 52
ANALYSIS OF EXPENSES.			
Salaries of general officers and clerks,			$5,000 00
Contingencies and miscellaneous,			9,367 91
TOTAL EXPENSES,			$14,367 91

Balance Sheet Sept. 30, 1888.

ASSETS.

Cost of road,	$14,497,655 26	
Cost of equipment,	1,447,828 49	
Lands in East Boston, Revere, Lawrence, etc.,	114,517 24	
Stock of Maine Central Railroad,	1,811,500 00	
Stock of Portland & Rochester Railroad,	182,050 00	
Stock of Eastern Railroad in New Hampshire,	900 00	
Stock of Portland, Bangor, Mt. Desert & Machias Steamboat Company,	15,000 00	
Stock of Chelsea Beach Railroad,	38,300 00	
Stock of Portsmouth, Gt. Falls & Conway R.R.,	551,300 00	
Stock of Wolfborough Railroad,	343,400 00	
TOTAL PERMANENT INVESTMENTS,		
Cash,	$43,321 01	$19,002,450 99
Bills receivable,	90,000 00	
Due from agents and companies,	26 40	
Sinking fund (in hands of trustees),	722,333 53	
Debit balances,	171,315 33	
TOTAL CASH ASSETS,		1,026,996 27
TOTAL ASSETS,		$20,029,447 26

LIABILITIES.

Capital stock: Common,	$4,997,600 00	
Capital stock: Preferred,	3,149,600 00	$8,147,200 00
Funded debt,		10,074,213·81
Unfunded debt, viz.:		
Interest unpaid,	$29,584 62	788,485 97
Dividends unpaid,	955 50	
Notes payable, land mortgage notes,	675,800 00	
Vouchers and accounts,	82,145 85	
Fund for redemption of mortgage debt,		722,333 53
Profit & Loss balance,		297,213 95
TOTAL LIABILITIES,		$20,029,447 26

DESCRIPTION OF ROAD.

Main line of road from Boston, Mass., to State Line in N. H.,	41.45 miles.
Main line of road in Massachusetts,	41.45 "
Double track on main line,	27.92 "
Same in Massachusetts,	27.92 "
Branches owned by company, viz.:	
Charlestown (double track),	1.09 "
Saugus (single track),	9.55 "
East Boston (single track),	1.91 "
East Boston (double track),	1.56 "
Swampscott (single track),	3.96 "
Marblehead (single track),	3.52 "
Lawrence (single track),	18.25 "
Lawrence (double track),	1.64 "
South Reading (single track),	8.12 "
Gloucester (single track),	16.94 "
Essex (single track),	6.00 "
Asbury Grove (single track),	1.06 "
Salisbury (single track),	3.79 "
Total length of branches owned by company,	77 39 "

Total length of branches owned by company in Massachusetts,	77.39 miles.
Double track on branches,	4.29 "
Same in Massachusetts,	4.29 "
Total road belonging to this company,	118.84 "
Sidings and other tracks not above enumerated,	72.10 "
Same in Massachusetts,	72.10 "
Total Length of Track, computed as Single Track,	223.15 "
Same in Massachusetts,	223.15 "
Total length of steel rails in tracks, not including steel-top rails,	156.04 "
[Weights per yard, 58, 60, 63, 67 and 68 pounds.]	
Number of stations on all *roads owned* by this company,	81
Same in Massachusetts,	81

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.
No. 13 — Rowley,	Plate Girder.	Iron.	103 feet 9 inches.
19 — Newburyport,	Pin Deck Truss.	"	1,194 "
27 — Swampscott,	Plate Girder.	"	40 " 6 "
28 — Swampscott,	" "	"	36 " 2 "
45 — Forest River,	" "	"	31 " 6 "
50 — Gloucester,	Rolled Beams.	"	33 "
1 — Boston,	Howe Truss Draw.	Wood.	47 " 4 "
2 — Somerville,	" " "	"	43 " 2 "
16 — Newbury,	Stringers.	"	25 " 6 "
23 — Saugus,	Piles, 4 bays.	"	59 " 7 "
35 — Danversport,	" 13 "	"	196 "

Bridges.	
Number of trestle bridges of 25 feet length and upwards,	20
Aggregate length of same for single track (1,499 feet).	
Aggregate length of same for double track (5,991 feet).	
Number of spans of iron bridges of 25 feet and upwards,	20
Aggregate length of same for single track (280 feet).	
Aggregate length of same for double track (1,443 feet).	
Number of spans of timber bridges of 25 feet and upwards,	10
Aggregate length of same for single track (137 feet).	
Aggregate length of same for double track (263 feet).	
Number of crossings of highways at grade,	166
Number of crossings of highways over railroad,	47
Number of crossings of highways under railroad,	12
Number of highway bridges 18 feet above track,	6
Number of highway bridges less than 18 feet above track,	41
Number of crossings at which gates or flagmen are maintained,	114
Number of crossings at which there are neither signals nor flagmen,	52
Number of railroad crossings at grade (specifying each):	6
Fitchburg Railroad at Prison Point.	
Boston & Lowell Railroad at Somerville.	
Boston & Albany Railroad at Somerville.	
Boston & Maine Railroad at Somerville.	
Boston & Maine Railroad at Salem.	
Boston & Maine Railroad at Danvers.	

Capital Stock.

Capital stock authorized by charter:	Common,	$8,310,000 00	
	Preferred,	3,150,000 00	
			$11,460,000 00
Capital stock authorized by votes of company:	Common,	$8,310,000 00	
	Preferred,	3,150,000 00	
			11,460,000 00

Capital stock issued (number of shares: Common, 49,976; preferred, 31,496); amount paid in,		$8,147,200 00
Capital stock paid in on shares not issued (number shares, 2),		243 80
Total Amount paid in, as per Books of the Co,		8,147,243 80
Total number of stockholders (common, 1,227; preferred, 416),	1,643	
Number of stockholders in Massachusetts (common, 778; preferred, 344),	1,122	
Amount of stock held in Massachusetts (common, $4,589,100; preferred, $2,727,200),	$7,316,300 00	

Debt.

Funded debt, as follows: —		
Essex R. R. bonds due Sept., 1891, rate of interest 4½ per cent.,		$192,600 00
Interest accrued on same during year,	$8,667 00	
Essex R. R. bonds due Sept., 1876, rate of interest 4½ per cent.,		1,800 00
Interest paid on same during year,	81 00	
U. S. gold mortgage certificates of indebtedness, due Sept., 1906, rate of interest 6 per cent.,		7,941,000 21
Interest accrued on same during year,	476,460 00	
Sterling mortgage certificates of indebtedness, due Sept., 1906, rate of interest 6 per cent. (£398,400),		1,938,813 60
Interest accrued on same during year,	116,328 82	
Interest accrued during the year,	$601,536 82	
Total Amount of Funded Debt,		$10,074,213 81

Name and Residence of Officers.

Samuel C. Lawrence, *President*, Medford, Mass. Edward Lesley, *Treasurer*, Newburyport, Mass. F. I. Amory, *Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors last Elected.

Samuel C. Lawrence, Medford, Mass. Walter Hunnewell, Wellesley, Mass. Arthur Sewall, Bath, Me. Frank Jones, Portsmouth, N. H. Nath'l J. Bradlee, Boston, Mass. Samuel C. Cobb, Boston, Mass. S. Endicott Peabody, Salem, Mass. Jarvis D. Braman, Boston, Mass. Joseph H. Gray, Boston, Mass.

Proper Address of the Company.

EASTERN RAILROAD COMPANY,
Causeway St., Boston, Mass.

SAMUEL C. LAWRENCE,
FRANK JONES,
ARTHUR SEWALL,
WALTER HUNNEWELL,
SAM'L C. COBB,
S. E. PEABODY,
JOSEPH H. GRAY,
Directors.

EDWARD LESLEY,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Dec. 4, 1888. Then personally appeared Samuel C. Lawrence (Nov. 28, '88), Samuel C. Cobb, Joseph H. Gray, S. E. Peabody (Dec. 1, '88), Frank Jones, Walter Hunnewell and Edward Lesley (Dec. 3, '88), and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. E. A. BARTLETT,
Justice of the Peace.

BOSTON, Nov. 9, 1888.

GENTLEMEN, — We hand you, annexed, report of the outstanding certificates of indebtedness of the Eastern Railroad Company, and, enclosed herewith, report of the sinking fund of said company, as required by sections 10 and 14 of chapter 236 of the Acts of 1876.

Respectfully yours,

WILL'D P. PHILLIPS,
CHARLES R. CODMAN,
Surviving Trustees Eastern Railroad,
By JOSHUA CRANE.

To the Hon. the Railroad Commissioners of Massachusetts.

To the Railroad Commissioners of Massachusetts.

We hereby certify that the mortgage certificates of indebtedness of the Eastern Railroad Company issued by us, and outstanding on the thirtieth day of September, 1888, were as follows: —

Certificates payable in sterling money of Great Britain, . .	£398,400
Certificates payable in gold dollars of the United States, .	$7,941,000 00
Scrip certificates, ...	21 cents.

The above shows a decrease from last report of $65.33 scrip certificates purchased and cancelled.

WILL'D P. PHILLIPS,
CHARLES R. CODMAN,
Surviving Trustees Eastern Railroad.

BOSTON, Oct. 1, 1888.

REPORT OF THE CONDITION OF THE SINKING FUND OF THE EASTERN RAILROAD COMPANY ON THE THIRTIETH DAY OF SEPTEMBER, 1888.

Amount on hand as per report of Sept. 30, 1887, ...				$596,127 68
1888.				
Sept. 1.	Amount received from the Eastern Railroad Company, ...		$100,000 00	
30.	Amount received from income for year, . . .	$26,307 34		
	Less scrip certificate number 1573 bought and cancelled,	$65 27		
	Accrued interest, . .	36 22		
		101 49		
			26,205 85	
				126,205 85
				$722,333 53

INVESTMENTS.

Railroad Bonds and Notes.

100,000 Boston & Lowell, cost,		$102,750 00
208,000 Fitchburg, cost,		222,485 00
27,000 Old Colony, cost,		31,550 60
6,000 Boston & Albany, cost,		6,990 90
230,000 Boston & Maine, cost,		238,000 75
2,000 New Bedford, cost,		2,458 20
7,000 Lowell & Lawrence, cost,		8,400 00
		$612,635 45

City and Town Bonds.

25,000 city of Cleveland, O.,	$25,937 50	
10,000 city of Lewiston, Me.,	12,500 00	
50,000 town of Braintree, Mass. (water loan),	52,250 00	
		90,687 50
		$703,322 95
Cash on hand,		19,010 58
		$722,333 53

WILL'D P. PHILLIPS,
CHARLES R. CODMAN,
Surviving Trustees Eastern Railroad.

BOSTON, Oct. 1, 1888.

REPORT

OF THE

FALL RIVER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Old Colony Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$13,027 60
Total expense (taxes),		398 20
Net income,		12,629 40
Interest accrued during year:		10,000 00
On funded debt,	$10,000 00	
Balance for the year (surplus),		2,629 40
Balance at commencement of year,		18,885 57
Balance Sept. 30, 1888 (deficit),		16,256 17

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$443,832 29
Due from agents and companies,		7 78
Profit & Loss balance,		16,256 17
TOTAL ASSETS,		$460,096 24
LIABILITIES.		
Capital stock,		$200,000 00
Funded debt,		200,000 00
Unfunded debt, viz:		60,096 94
Notes payable,	$60,096 24	
TOTAL LIABILITIES,		$460,096 24

DESCRIPTION OF ROAD.	
Main line of road from Fall River to New Bedford,	12.25 miles.
Main line of road in Massachusetts,	12.25 "
Total road belonging to this company,	12.25 "
Sidings and other tracks not above enumerated,	.832 "
Same in Massachusetts,	.832 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	13.082 "
Same in Massachusetts,	13.082 "
Total length of steel rails in tracks, not including steel-top rails,	12.082 "
[Weights per yard, 56 pounds.]	
Number of stations on all *roads owned* by this company,	8
Same in Massachusetts,	8

Bridges.		
Number of trestle bridges of 25 feet length and upwards,		1
Aggregate length of same for single track (25 feet).		
Number of spans of iron bridges of 25 feet and upwards,		1
Aggregate length of same for single track (28 feet).		
Number of crossings of highways at grade,		10
Number of crossings of highways over railroad,		1
Number of crossings of highways under railroad,		1
Height of lowest bridge above the rail,		15 feet.
Number of crossings at which there are neither signals nor flagman,		10
Capital Stock.		
Capital stock authorized by charter,	$200,000 00	
Capital stock authorized by votes of company,	200,000 00	
Capital stock issued (number of shares, 2,000); amount paid in,		$200,000 00
Total Amount paid in, as per Books of the Co.,		200,000 00
Total number of stockholders,	24	
Number of stockholders in Massachusetts,	22	
Amount of stock held in Massachusetts,	$194,900 00	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due April 1, 1895, rate of interest 5 per cent.,		$200,000 00
Interest paid on same during year,	$10,000 00	

Name and Residence of Officers.

Charles F. Choate, *President*, Southborough, Mass. John M. Washburn, *Treasurer*, Boston, Mass. John S. Brayton, *Clerk of Corporation*, Fall River, Mass.

Name and Residence of Directors last Elected.

Charles F. Choate, Southborough, Mass. Frederick L. Ames, No. Easton, Mass. J. A. Beauvais, New Bedford, Mass. H. A. Blood, Fitchburg, Mass. John S. Brayton, Fall River, Mass. William Rotch, Boston, Mass. Morgan Rotch, New Bedford, Mass. Royal W. Turner, Randolph, Mass.

Proper Address of the Company.

FALL RIVER RAILROAD COMPANY,
Box 379, Boston, Mass.

CHARLES F. CHOATE,
J. A. BEAUVAIS,
WM. ROTCH,
FRED'K L. AMES,
JOHN S. BRAYTON,
ROYAL W. TURNER,
MORGAN ROTCH,
Directors.
JOHN M. WASHBURN,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 31, 1888. Then personally appeared Charles F. Choate, J. A. Beauvais, Wm. Rotch, Frederick L. Ames, John S. Brayton, Royal W. Turner, Morgan Rotch and John M. Washburn, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

AUSTIN W. ADAMS,
Justice of the Peace.

REPORT

OF THE

TRUSTEES OF THE FALL RIVER, WARREN & PROVIDENCE RAILROAD COMPANY,

For the Year ending September 30, 1888.

[This road is operated by the Trustees for the Bondholders under foreclosure.]

General Exhibit for the Year.		
Total income,		$36,645 83
Total expense (including taxes),		41,428 07
Net deficit,		4,782 24
Balance for the year (deficit),		4,782 24
Balance at commencement of year (deficit),		138,963 44
Balance Sept. 30, 1888 (deficit),		143,745 68
Analysis of Earnings.		
From local passengers,		$529 55
through passengers (to and from other roads),		26,954 15
express and extra baggage,		1,500 00
mails,		445 48
Total earnings from passenger department,		29,429 18
From local freight,		11 64
through freight (to and from other roads),		7,145 01
Total earnings from freight department,		7,156 65
Total Transportation Earnings,		36,585 83
Income from all other sources, viz.:		60 00
Rents,	$60 00	
Total Income from all Sources,		$36,645 83
Analysis of Expenses.		
Legal expenses,		$594 55
Outside agencies and advertising,		5 07
Contingencies and miscellaneous,		34 96
Repairs of bridges (including culverts and cattle-guards),		17,205 40
Repairs of buildings,		3,672 07
Repairs of fences, road crossings and signs,		151 50
Renewal of ties,		1,558 20
[Number laid, 3,873.]		
Repairs of road-bed and track,		3,057 05
Use of locomotives,		1,826 35
Fuel for locomotives,		1,826 36
Oil and waste,		11 44
Locomotive service,		1,993 34
Passenger-train service,		2,913 78
Mileage passenger-cars,		3,713 07
Freight-train service,		817 63

Mileage freight-cars,	$217 84
Personal injuries,	308 33
Agents and station service,	1,205 90
Station supplies,	14 25
TOTAL OPERATING EXPENSES,	$41,127 09
Taxes,	300 98
TOTAL OPERATING EXPENSES AND TAXES,	$41,428 07

Balance Sheet Sept 30, 1888.

ASSETS.

Cost of road,		$310,747 60
Due from agents and companies,		1,859 52
Profit & Loss balance,		143,745 68
TOTAL ASSETS,		$456,352 80

LIABILITIES.

Capital stock,		$150,000 00
Funded debt,		300,000 00
Unfunded debt, viz.:		6,352 80
Vouchers and accounts,	$6,352 80	
TOTAL LIABILITIES,		$456,352 80

MILEAGE, TRAFFIC, ETC.

Passenger-train mileage,	31,900
Freight-train mileage,	6,580
TOTAL TRAIN MILEAGE,	38,480
Number of season-ticket passengers,	19,054
Number of local passengers,	5,058
Number of through passengers (to and from other roads, including season),	173,337
TOTAL NUMBER OF PASSENGERS CARRIED,	178,395
Local passenger mileage (local passengers carried one mile),	17,241
Through passenger mileage (through passengers carried one mile),	996,358
TOTAL PASSENGER MILEAGE,	1,013,599
Number tons local freight,	18
Number tons through freight (to and from other roads),	13,733
TOTAL NUMBER TONS FREIGHT CARRIED,	13,751
Local freight mileage (tons local freight carried one mile),	72
Through freight mileage (tons through freight carried one mile),	105,864
TOTAL FREIGHT MILEAGE,	105,936
Average number of cars in passenger-trains,	3
Average number of persons employed,	16

DESCRIPTION OF ROAD.

Main line of road from Fall River, Mass., to Warren, R. I.,	5.794 miles.
Main line of road in Massachusetts,	3.662 "
Main line of road in Rhode Island,	2.132 "
Total road belonging to this company,	5.794 "

Sidings and other tracks not above enumerated,	.520 miles.
Same in Massachusetts,	.040 "
Total Length of Track, computed as Single Track,	6.314 "
Same in Massachusetts,	3.702 "
Total length of steel rails in tracks, not including steel-top rails,	5.344 "
[Weights per yard, 56 pounds.]	
Total miles of road operated by this company,	5.794 "
Total miles of road operated by this company in Massachusetts,	3.662 "
Number of stations in Massachusetts on all *roads operated* by this company,	2
Number of telegraph offices in same,	1
Number of stations on all *roads owned* by this company,	2
Same in Massachusetts,	2

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When Built.
Swansea,	Plate girder.	Iron.	2 spans, 107 ft. 1 in.	Dec., 1887.
Swansea,	Plate girder.	Iron.	2 spans, 144 ft. 9 in.	Feb., 1888.

Bridges.

Number of spans of iron bridges of 25 feet and upwards,	4
Aggregate length of same for single track (251 ft. 10 in.).	
Number of crossings of highways at grade,	3
Number of crossings of highways over railroad,	2
Number of highway bridges less than 18 feet above track,	2
Number of crossings at which electric signals are maintained,	1
Number of crossings at which there are neither signals nor flagmen,	2

Rates of Fare, etc.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	3.07 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.70 "
Average rate of fare per mile for season-ticket passengers,	.72 "
Average rate of fare per mile *received* from *all* passengers,	2.71 "
Average rate of local freight per ton per mile,	10.3 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	6.7 "
Average rate of freight per ton per mile *received* from *all* freight,	6.7 "

Capital Stock.

Capital stock authorized by charter,	$150,000 00
Capital stock authorized by votes of company,	150,000 00
Capital stock issued (number of shares, 1,500); amount paid in,	$150,000 00
Total Amount paid in as per Books of the Company,	150,000 00
Total number of stockholders,	27
Number of stockholders in Massachusetts,	11
Amount of stock held in Massachusetts,	$103,300 00

Debt.

Funded debt, as follows: —	
First mortgage bonds due April 17, 1883, rate of interest 7 per cent.,	$300,000 00

NAME AND RESIDENCE OF OFFICERS.

Charles F. Choate, *President*, Southborough, Mass. James R. Kendrick, *General Manager*, Boston, Mass. John M. Washburn, *Treasurer*, Boston, Mass. John S. Brayton, *Clerk of Corporation*, Fall River, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles F. Choate, Southborough, Mass. Frederick L. Ames, North Easton, Mass. John S. Brayton, Fall River, Mass. Royal W. Turner, Randolph, Mass. Thomas Dunn, Newport, R. I. Thomas J. Borden, Fall River, Mass.

PROPER ADDRESS OF THE COMPANY.

FALL RIVER, WARREN & PROVIDENCE RAILROAD COMPANY,
BOX 379, BOSTON, MASS.

CHARLES F. CHOATE,
JOHN S. BRAYTON,
FRED'K L. AMES,
THOS. DUNN,
ROYAL W. TURNER,
THOS. J. BORDEN,
Directors.
JOHN M. WASHBURN,
Treasurer and Trustee.
J. R. KENDRICK,
General Manager.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 31, 1888. Then personally appeared Charles F. Choate, John S. Brayton, Frederick L. Ames, Thomas Dunn, Royal W. Turner, Thomas J. Borden, John M. Washburn and James R. Kendrick, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

AUSTIN W. ADAMS,
Justice of the Peace.

REPORT

OF THE

FITCHBURG RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$5,463,298 00
Total expense (including taxes),		4,196,604 99
Net income,		1,266,693 01
Rentals:		281,280 00
Vermont & Massachusetts Railroad Co.,	$244,580 00	
Boston & Albany Railroad Co.,	5,100 00	
Boston & Maine Railroad,	3,600 00	
Southern Vermont Railroad,	12,000 00	
Troy & Bennington Railroad Co.,	15,400 00	
Cheshire Railroad Co.,	600 00	
Interest accrued during year:		739,103 28
On funded debt,	$680,387 94	
On other debt,	58,715 34	
Dividends declared (2 per cent.):*		261,835 60
Balance for the year (deficit),		15,525 87
Balance at commencement of year,		281,674 87
Balance Sept. 30, 1888 (surplus),		266,149 00
ANALYSIS OF EARNINGS.		
From local passengers,		$1,226,316 20
through passengers (to and from other roads),		459,113 58
express and extra baggage,		121,092 22
mails,		43,653 98
other sources, passenger department,		30,732 88
Total earnings from passenger department,		1,880,908 86
From local freight,		941,043 08
through freight (to and from other roads),		2,320,323 59
other sources, freight department,		51,045 09
Total earnings from freight department,		3,312,411 76
TOTAL TRANSPORTATION EARNINGS,		5,193,320 62
Rents for use of road,		58,500 00
Income from all other sources, viz.:		211,477 38
Rent of property,	$38,926 73	
Elevators, wharves, etc.,	152,252 84	
Interest and premiums,	20,297 81	
TOTAL INCOME FROM ALL SOURCES,		5,463,298 00
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$135,426 97
Legal expenses,		15,970 82
Insurance,		19,129 77
Stationery and printing,		55,341 05

* On preferred capital stock.

Outside agencies and advertising,		$73,813 67
Contingencies and miscellaneous,		28,090 05
Repairs of bridges (including culverts and cattle-guards),		45,241 17
Repairs of buildings,		89,768 01
Repairs of fences, road-crossings and signs,		22,012 21
Renewal of rails,		121,705 59
[Number tons steel laid, 5,897.]		
Renewal of ties,		98,058 36
[Number laid, 215,679.]		
Repairs of road-bed and track,		475,748 26
Repairs of locomotives,		254,604 37
Fuel for locomotives,		513,716 82
[Tons of coal, 144 911; cords of wood, 661¼.]		
Water supply,		20,537 94
Oil and waste,		24,766 91
Locomotive service,		398,212 61
Repairs of passenger-cars,		123,810 58
Passenger-train service,		139,721 56
Passenger-train supplies,		18,559 20
Mileage passenger-cars,		22,111 18
Repairs of freight-cars,		228,528 25
Freight-train service,		318,732 95
Freight-train supplies,		12,544 90
Mileage freight-cars,		79,528 48
Telegraph expenses,		73,190 32
Loss and damage, freight and baggage,		11,620 10
Loss and damage, property and cattle,		3,217 68
Personal injuries,		29,291 62
Agents and station service,		514,880 86
Station supplies,		43,657 39
TOTAL OPERATING EXPENSES,		$4,011,539 65
Taxes,		185,065 34
TOTAL OPERATING EXPENSES AND TAXES,		$4,196,604 99
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Grading and masonry,		$7,517 00
Superstructure, including rails,		7,517 00
Passenger and freight stations, wood-sheds, and water-stations,		44,589 55
Engine-houses, car-sheds, and turn-tables,		204 96
Purchase of other roads:		13,639 59
B., H., T. & W. R'y,	$4,000 00	
T. & G. R. R. & H. T.,	9,639 59	
Construction not apportioned:		769,444 09
Improvements on Worcester, Tunnel & Western Divisions,	$471,153 59	
New freight yards,	125,103 25	
Shops, machinery and tools,	40,018 50	
Docks and elevators,	133,168 75	
TOTAL FOR CONSTRUCTION,		$842,912 19
Locomotives and air-brakes (number, 10),		91,231 58
Passenger, mail and baggage cars and steam heat (number, 21),		107,092 77
Freight and other cars (number, 742),		468,347 89
TOTAL FOR EQUIPMENT,		666,672 24
Other expenditures charged to property account:		
Real estate,		84,616 15
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		1,594,200 58

Balance Sheet Sept. 30, 1888.

ASSETS.

Cost of road,	$32,422,597 46	
Cost of equipment,	3,523,080 75	
Lands in Boston, Worcester and on line of road,	603,592 40	
TOTAL PERMANENT INVESTMENTS,		$36,549,270 61
Cash,	$147,852 15	
Bills receivable,	159,265 00	
Due from agents and companies,	806,720 12	
Materials and supplies,	836,109 35	
Debit balances,	850,166 15	
Vt. & Mass. Railroad improvements,	1,465,211 88	
TOTAL CASH ASSETS,		4,265,324 65
TOTAL ASSETS,		$40,814,595 26

LIABILITIES.

Capital stock: { Common,	$7,000,000 00 }	$20,525,100 00
Capital stock: { Preferred,	13,525,100 00 }	
Capital stock, preferred stock held for trustees under Troy & Boston Consolidation,		250,000 00
Funded debt: Bonds,		17,534,600 00
Bonds held under provision of T. & B. Consolidation,		750,000 00
Unfunded debt, viz.:		1,488,746 26
Interest unpaid,	$238,597 08	
Dividends unpaid,	16,448 20	
Accrued taxes not due,	134,096 63	
Accrued rentals not due,	134,798 32	
Vouchers and accounts,	964,806 03	
Profit & Loss balance,		266,149 00
TOTAL LIABILITIES,		$40,814,595 26

MILEAGE, TRAFFIC, ETC.

Passenger-train mileage,	1,937,513
Freight-train mileage,	1,883,301
TOTAL REVENUE-TRAIN MILEAGE,	3,820,814
Switching-train mileage,	1,061,285
Other train mileage,	134,227
TOTAL TRAIN MILEAGE,	5 016,326
Number of season-ticket passengers,	353,348
Number of local passengers (including season),	5,196,701
Number of through passengers (to and from other roads),	395,172
TOTAL NUMBER OF PASSENGERS CARRIED,	5,591,873
Local passenger mileage (local passengers carried one mile),	64,295,881
Through passenger mileage (through passengers carried one mile),	21,033,726
TOTAL PASSENGER MILEAGE,	85,329,607
Number tons local freight,	879,482
Number tons through freight (to and from other roads),	2,331,894
TOTAL NUMBER TONS FREIGHT CARRIED,	3,211,376
Local freight mileage (tons local freight carried one mile),	33,556,677
Through freight mileage (tons through freight carried one mile),	269,401,938
TOTAL FREIGHT MILEAGE,	302,958,615
Average weight of passenger-trains (exclusive of passengers),	159¼ tons.

Average number of cars in passenger-trains,	4.5
Average weight of freight-trains (exclusive of freight),	350.3 tons.
Average number of cars in freight-train,	27.8
Average number of persons employed,	4,607
DESCRIPTION OF ROAD.	
Main line of road from Boston to Fitchburg, and Greenfield to Troy and Rotterdam, N. Y.,	189.96 miles.
Main line of road in Massachusetts,	94.00 "
Main line of road in New York,	89.47 "
Main line of road in Vermont,	6.49 "
Double track on main line,	100.56 "
Same in Massachusetts,	94.00 "
Branches owned by company, viz.:	
Ice, Boston (double track),	0.68 "
Watertown (single track),	8.26 "
Marlboro' (single track),	12.42 "
Peterboro' & Shirley (single track),	23.62 "
Worcester (single track),	36.00 "
Ashburnham (single track),	2 59 "
Saratoga & Schuylerville (single track),	25.52 "
Total length of branches owned by company,	109.09 "
Total length of branches owned by company in Massachusetts,	74.10 "
Total length of branches owned by company in N. H.,	9.47 "
Total length of branches owned by company in New York,	25.52 "
Double track on branches,	0.68 "
Same in Massachusetts,	0.68 "
Total road belonging to this company,	299.05 "
Sidings and other tracks not above enumerated,	180.56 "
Same in Massachusetts,	139.51 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	580.85 "
Same in Massachusetts,	402.29 "
Total length of steel rails in tracks, not including steel-top rails,	468.00 "
[Weights per yard, 60, 72 and 76 pounds.]	
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Vermont & Massachusetts Railroad, length,	56.00 miles.
Turner's Falls Branch, length,	2 80 "
Troy & Bennington Railroad, length,	5.04 "
Southern Vermont Railroad, length,	6.19 "
Total length of above roads,	70.03 "
Total length of above roads in Massachusetts,	58.80 "
Total length of above roads in other States (specifying each):	
Vermont, length,	6.19 "
New York, length,	5.04 "
Total miles of road operated by this company,	369.08 "
Total miles of road operated by this company in Massachusetts,	226.90 "
Number of stations in Massachusetts on all *roads operated* by this company,	92.00 "
Number of telegraph offices in same,	77.00 "
Number of stations on all *roads owned* by this company,	124.00 "
Same in Massachusetts,	76.00 "
EQUIPMENT.	
Number of locomotives (leased, 9; owned, 174),	183
Number of passenger-cars (leased, 14; owned, 172),	186
Number of baggage, mail and express cars (leased, 3; owned, 43),	46
Number of freight-cars (basis of 8 wheels), (leased, 205; owned, 5,176),	5,381
Number of other cars (owned, 28),	28
Snow-ploughs and scrapers (owned, 12),	12

List of Accidents.

	From Causes beyond their own Control (in Massachusetts).		From their own Misconduct or Carelessness (in Massachusetts).		Total in Massachusetts.		Total on Whole Road Operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, .	-	1	2	3	2	4	3	4
Employees, .	4	7	14	19	18	26	24	78
Others, .	1	-.	21	12	22	12	24	16

Statement of each Accident in Massachusetts.

Oct. 2, 1887. — Waverly: Thomas Curry, while riding on platform of baggage-car on passenger-train 249, fell from car, and the wheels of this or following train passed over his neck, severing his head from body. Trainmen knew nothing of this affair.

October 10. — Westminster: Joseph Lesure, construction laborer, attempted to board a moving freight-train; his foot slipped under wheels, and two or three toes were crushed so as to require amputation.

October 15. — Gardner: W. J. O'Brien, while coupling freight-cars, caught his hand between deadwoods; hand jammed and one finger amputated by surgeon afterwards.

October 20. — North Adams: Nicholas Whalen, freight brakeman, while in act of pulling pin between E. D. car 18 and R. W. & O. 1606. A bolt on E. D. 18, with patent drawbar, cut the bone of his left arm below the elbow.

October 27. — Fitchburg: O. P. Casavant came onto crossing after gates were lowered for passage of trains; while watching inward train he disregarded train moving outward; he was struck by latter train and somewhat bruised, but no bones broken.

October 30. — North Adams: Henry Merys, freight brakeman, while coupling cars had hand caught between deadwoods; one finger cut off, three broken and thumb broken.

November 2. — West Fitchburg: Mrs. James Hoar and her grandson, George Hoar, four years old, started to walk across the iron bridge No. 61, in face of approaching passenger-train; they had walked on about ten feet or so when they were both struck and instantly killed by engine. Engineer blew danger whistle, and if Mrs. Hoar had kept her presence of mind she could have stepped through onto other track. Mrs. Ellen Hoar, aged seventy years and blind; George Frisbie Hoar, grandson, four years old.

November 3. — Charlestown: Philip Williams stepped directly in front of engine of outward passenger-train, probably to avoid inward train; outward bound engine struck him, injuring his head, hands and feet. He was taken to Massachusetts General Hospital. This accident was in Charlestown yard, just west of Boston & Maine crossing. Died at Massachusetts General Hospital Nov. 4, 1887.

November 5. — Charlestown: Archibald Duncan McLeod, a freight brakeman, was found dead beside track with broken skull; no one saw the accident or knew just how it occurred. Medical examiner says body evidently had not

been run over. McLeod's train was due to leave long bridge at 7.30 P.M. He evidently got onto a passenger-train to ride up to his caboose, and sprang off from this moving passenger-train, and fell, and struck his head against end of tie.

November 8. — Somerville: The body of James Reagan was found lying between rails of inward track, very badly mangled, — head, arms and legs cut off. A train had evidently passed over him; it is not known what train. Body discovered by engineer of outward train about 11.38 P.M.

November 9. — North Adams: E. Arbour, freight brakeman, went in between two freight-cars (D. & H. 10196, and W. S. 23466) to make hitch, and caught his arm and hand between deadwoods (left arm and hand); arm amputated below elbow.

November 11. — North Adams: Thomas Mason, a freight brakeman, fell from a moving freight-train in Hoosac Tunnel; wheels passed over left leg. He was taken to North Adams hospital, and leg was amputated between knee and hip.

November 15. — Ayer Junction: Con. Riley jumped from rapidly moving train (passenger-train), and fell under car; wheels passed over his body, killing him instantly.

November 15. — Worcester: Henry G. Bickford, freight brakeman, while coupling cars had left arm badly bruised by being caught between deadwoods.

November 17. — Shelburne Falls: C. D. Babbitt, freight conductor, while coupling cars had his right arm caught between deadwoods and badly bruised.

November 19. — West Cambridge: Mrs. Ellen Gurney sprang in front of an empty passenger-train that was moving around the Watertown Junction "Y;" she was knocked down and train passed over her. She received small cut on head and internal injuries. She was taken to Massachusetts General Hospital; died about 9 P.M.

November 24. — Fitchburg: Susanne LeBlanc, a young woman about twenty years old, passed under the gates and onto the track as west-bound passenger-train was approaching. She had a young female friend with her of about her own age. They crossed tracks just ahead of engine all right, but they suddenly turned back onto west-bound track, Miss LeBlanc apparently dragging her friend. Miss LeBlanc was struck by engine and instantly killed; skull fractured. The friend, Susan Carmen, received scalp wound. Very reliable witnesses testify that the women came under the gates; that the gates were down; that bell was ringing, and that crossing and danger signals were blown by engine whistle.

November 30. — Fitchburg: Express passenger-train No. 37 ran into rear of freight-train No. 57 in East Yard, Fitchburg, as freight was running off from main track onto side track. No passengers injured in train 37. George Joslin, a drover, riding in saloon car on freight-train, had two ribs broken and was badly shaken up. Wm. Dixon, fireman (train 37), jumped from engine, and, by striking on ground, received injuries to face and abdomen; was taken to Massachusetts General Hospital. Both died on morning of December 1. One wrecked freight-car contained kerosene oil in barrels; fire started, consuming two cars of cotton, baggage-car of train 37, and burning engine of train 37.

December 5. — Worcester: The body of John J. Murphy was found lying between rails in yard, badly cut up. Unable to ascertain cause or circumstances of accident. Head and leg cut off.

December 7. — Union Square: William T. Biathrow, car builder, was standing in front of car inside the old paint-shop — shop doors closed. On account of a misplaced switch, a shifting engine drove a car through the door: Biathrow was caught between the cars and instantly killed. Wilbur F. Sleeper, standing near Biathrow, was injured slightly on leg by being struck by falling door.

December 7. — Fitchburg: Andrew A. Keyes, car inspector, when about to repair a car, left a wheelbarrow standing on another track close by; he saw engine coming on this track, and he sprang in front of its tender to pull off his wheelbarrow; engine struck wheelbarrow and drove its handle into his leg, causing a bad flesh wound.

December 15. — Union Square: An unknown man was struck by engine of outward bound passenger-train, and instantly killed; he was walking the track. It was dark and foggy. His name since learned to be Roger Cavanagh.

December 15. — Gardner: Fred O'Neil, freight brakeman, had right hand and arm badly lacerated and crushed while in act of making coupling between two freight-cars. Common link and pin; no defect. He was taken to Massachusetts General Hospital.

December 17. — Littleton: M. Mack, freight brakeman, killed; John E. Morse, fireman, injured about abdomen. Morse was injured by jumping from engine. Freight No. 39 was running east on main inward track; construction train was running in same direction on side track towards switch for inward main track; side collision. Engine and number of cars wrecked and thrown from track.

December 30. — Greenfield: Henry O. Newton, freight brakeman, in attempting to get on head end of a moving freight-car, lost his hold, and fell onto rail; wheels ran over his head and body, killing him instantly. Cars were being shifted about the yard, and Newton was to catch on and ride this car down onto side track.

January 2, 1888. — Concord Junction: The body of a man (supposed to be B. N. Sherwood of Maynard, Mass.) was seen, lying over rail, face down, by engineer Young of train 43; he could not stop engine in season, and engine struck the body. When train stopped, trainmen went back; found body badly mangled and cold. Trainmen think train 43 was not original cause of accident, but we have no further information now.

January 9. — West Cambridge: Engine rode point of switch, and ran down wrong side track. Car, loaded with wood, was on this siding, and fireman Clifford Clark sprang from engine, receiving cut and injuries to his knee. Frank Lowell, engineer, remained on engine after collision, and to avoid going over bank at end of track, as he was unable to stop, he jumped, receiving some injuries to his back. This engine was moving from one side track to another, and was making flying switch.

January 26. — Williamstown: Express passenger-train No. 37 ran into freight No. 57 (57 was stalled in the snow); rear end collision. Freight conductor P. Cudmore and freight brakeman Geo. Wheelock died early on morning of January 27. They were in saloon of train 57. J. R. Lamb, freight brakeman, jumped from saloon, and escaped with cut foot; slight injury. Fireman Chas. Mowers of passenger-train engine sprained his arm, jumping from engine.

February 2. — Fitchburg: Express passenger-train No. 37 struck broken frog just at the beginning of the new East Yard, about one and one-half miles

east of Fitchburg; engine and first five cars stayed on track; seven cars derailed. No serious damage to cars or passengers. Mrs. C. C. Morse very slightly injured about her wrist.

February 3. — Charlestown: Levi Moore, car washer for Pullman Palace Car Company, jumped from standing car he had been working on, onto main track, in front of approaching passenger-train. Engine cylinder struck him in back; he was somewhat injured about head and back. Taken to Massachusetts General Hospital.

February 3. — Greenfield: Fred Lathrop, freight brakeman, while coupling cars was killed. Flat cars loaded with lumber. Ends of lumber projected from ends of cars a few inches, and his head was caught between projecting timbers.

February 6. — Shelburne Falls: James Sands, freight brakeman, while attempting to couple cars, had his arm caught between the deadwoods; arm badly squeezed and broken at elbow. No defects reported on drawbars or deadwoods.

February 24. — West Cambridge: As the passenger-train 163 was coming around curve on the Watertown branch, the engineer saw an object lying between the rails; he was unable to stop train in time to prevent running over it. Train was stopped as soon as possible, and trainmen went back and found mangled body of a man. Name, Juda Donnie.

February 25. — Concord Junction: John E. Paine, a freight brakeman, received a broken back and broken pelvis bone by being run over by a flat car. Engine was backing a lot of cars on a side track; the hind car was a flat car; next to the flat was a box car. Paine said he supposed the box was the end car of the string, and he stepped in to make hitch. He died at Massachusetts General Hospital about 6 A.M. Feb. 26, 1888. Wheels did not pass over him. Injuries were from brake-beam and under-rigging.

March 3. — North Adams: George Casey of North Adams (in the employ of the Westinghouse Company, placing electric lights in Hoosac Tunnel), while picking ice on wall side of west-bound track, was struck by a train (express passenger 143) coming east, on west-bound track, about 10.30 A.M., on Feb. 28, 1888; both legs cut off. He was taken to North Adams hospital, and died at 3 A.M. March 1, 1888. Casey was working alone, and was found about 6,500 feet west of East Portal.

March 3. — North Adams: On Feb. 29, 1888, about 12.50 P.M., Joseph Premaux, a stone-cutter for Fitchburg Railroad, was struck and instantly killed by west-bound passenger-train No. 32, about one mile east of North Adams station. Premaux was walking westward on west-bound track; engine had just rounded curve, and engineer sounded whistle twice, but Premaux walked heedlessly on with back to approaching engine.

March 12. — West Deerfield: Peter Rome, a section man, walking the track alone, was found, lying between tracks, some time after passage of east-bound snow plough; skull fractured. He died at 8.30 P.M. same day. No one knows how accident occurred, but it is supposed that the snow plough struck him. Very severe snow-storm.

March 13. — Gardner: Brice S. McDowell, engineer, killed. West-bound snow plough struck a big drift, and was thrown over onto east-bound track. McDowell got off his engine, and was probably on ground side of the plough, or had got onto the plough, when an east-bound plough came along at same instant, and went through west-bound plough, killing McDowell and slightly injuring brakemen L. H. Pearson, C. L. Bowdon, John H. Kane, and John

Cann, and A. H. Clark, conductor. Very severe snow-storm; snow flying; no time to get out flag.

March 8. — North Adams: Henry W. Turner, freight brakeman, fell from moving freight-train in Hoosac Tunnel, receiving a bad scalp wound and a crushed arm. He was taken to North Adams hospital, and arm was amputated.

March 20. — Fitchburg: J. Johnson, freight brakeman, had hand crushed between deadblocks while attempting to make hitch. Am informed that his hand was resting on end of bunter of deadblock when cars came together. He was taken to Massachusetts General Hospital.

March 20. — Fitchburg: John Harrington, freight brakeman, was making a coupling between moving freight-cars; flange or flat of wheel caught heel of his rubber boot; wheel ran onto his right foot, breaking some of the small bones of foot. In throwing himself out from the cars he also received bruise on left leg.

April 2. — Greenfield: William Coyle, freight brakeman, stepped in to make a hitch; cars were coming too fast and he stepped out. When cars rebounded after striking he stepped in again, and his left hand was caught between deadwoods, in slack of train, crushing his thumb so that it was amputated.

April 19 *or* 20. — Gardner: On April 20, about 8 A.M., the body of Walter S. Kingsbury was found by the section walker lying side of track about three miles south of Gardner depot. No cars had passed over. It is supposed that he jumped from some night train. Injuries were small bruise on head and dislocated shoulder. None of the trainmen saw Kingsbury, and had no knowledge of the accident. Cause of accident not known.

April 23. — Cambridge: James Powers was walking between the main tracks; he stepped in front of an approaching passenger-train; engine struck him and passed over his arm and leg. Injuries were crushed leg, crushed arm and large gash in head. He was taken to Massachusetts General Hospital; he died that night.

May 4. — North Adams: John Clifford stole a ride on train 36 from Shelburne Falls to North Adams. Before reaching the depot he jumped off and was killed.

May 16. — Charlestown: W. R. Churchill, riding on the lowest step of rear platform on rear passenger-coach of train 83, let go his hold of car rail to wave his hand, and fell from the moving train. His injuries were broken leg and bruises about head and shoulder. He was taken to Massachusetts General Hospital.

May 22. — Boston: Hugh Cochrane, conductor of freight switcher, was standing on top of freight-car; on his giving motion the train started, and he lost his balance and fell between the rails, and, catching on the brake rigging, was shoved along. His arm was badly crushed and there were serious injuries on head. He was taken to Massachusetts General Hospital; he died at 4.05 A.M.

May 23. — Charlestown: This morning, about 7.05 A.M., as engine was pulling a freight-train in over Prison Point crossing, Charlestown, — the gates being down, — a pair of horses attached to a heavily loaded ice-cart broke through the gates and ran into the engine. The pilot of the engine evidently struck in between the hind legs of the horses and the cart. The whole team was carried down the track a number of rods; cart was broken, one horse killed and the other horse badly injured and will probably die. The driver, David Marsh, is somewhat injured, and his companion, named

Duncan, is very seriously injured. Both were taken to Massachusetts General Hospital; have not yet ascertained extent of their injuries. The gates were broken, — both arms. Witnesses say that the team had been standing at the closed gates for about a minute, that to keep his horses from backing the driver slapped the reins onto them just as the engine was coming onto the crossing; and the driver seemed to lose control of them, and they pulled and went through the gates onto the engine. David L Marsh died at Massachusetts General Hospital at 9.45 P.M. that night. Frank Duncan slightly injured about ankle.

May 27. — Athol: George Anderson, while walking the track, was struck and instantly killed by east-bound engine. In the glare of head-light engineer saw a man on the track, and whistled, reversed engine and tried to stop. A west-bound train was passing at the time, and the fireman of the west-bound engine shouted to Anderson to get off the track.

May 30. — Littleton: Dexter Smith, walking the track, was struck by the engine of inward bound express-train, and instantly killed.

June 14. — Hoosac Tunnel: The dead body of freight brakeman J. Welcome was found on track in Hoosac Tunnel by track walker. A freight-train on which Welcome was braking had just passed through Welcome fell from this train.

June 22. — North Adams: John Gilhooly was instantly killed and John Shield badly injured by being struck by an engine. Both were walking the track, and attempted to cross track in front of approaching engine.

July 16. — Charlestown: John Sharkey, employee in shop, alighted from inward bound passenger-train at the "know nothing" stop, and, while walking across tracks, was struck by a freight-train; he was thrown down and the wheels passed over his foot, badly crushing it. He was taken to Massachusetts General Hospital.

July 24. — Boston: At about 4.50 P M. yesterday a part of the bridge broke down at the north-east end of our Boston passenger depot. The ends of two empty passenger-cars fell in; some of the flooring of the car shed fell in. Passenger brakeman A. C. Morris was standing in the shed, and fell through with the wreck into the water and was drowned. The bridge was being repaired, and through some misunderstanding some cars were run down onto this place.

July 26. — Worcester: A vehicle containing Philip Gilmore, Frederick Sherby and Edward Quinlan was struck on Thomas Street crossing by engine No. 51, backing over from Union Depot to engine house. Engine bell ringing; flagman swinging his lantern. There were gates, but gateman did not lower them. Wagon smashed; horse killed; Quinlan reported uninjured. Gilmore and Sherby slightly injured; taken to Worcester hospital, but discharged next morning.

August 1. — Lake Walden: Michael Moline attempted to board a moving train and fell under car, receiving large gash on leg between thigh and knee. Taken to Massachusetts General Hospital. Physician says injury not serious.

August 4. — Orange: Asa Phillips, an elderly man and deaf, while walking the track, was struck by engine, and injured about the back and head.

August 10. — South Acton: Louis N. Finney and William Sanford, section men, were working on the inward track; to avoid an inward bound freight-train they stepped from this track onto the outward track; there is quite a sharp curve at this point; the outward bound express-train 32 struck these two men, killing them instantly. A crossing whistle was blown about one-

eighth of a mile before reaching place of accident, and danger whistles were blown.

August 19. — Charlestown: Wm. Fitzgerald, section man, repairing track, was struck by locomotive. Engineer blew danger whistles, but Fitzgerald did not heed them. He was injured about the head and back. Taken to Massachusetts General Hospital.

August 24. — Waltham: Thomas Carney, freight conductor, attempted to board a moving freight-train, and fell to the ground between the cars; one wheel passed over his body, killing him instantly.

August 25. — Concord Junction: Robert Elliot was found lying side of west-bound track about 11.35 P.M., with both legs cut off. He was unable to state how he got there. None of the trainmen know any thing about it, and as yet we have been unable to ascertain facts of accident. He was taken to Massachusetts General Hospital, and died at 4 A.M., Aug. 26, 1888. It is supposed he was stealing a ride on freight-train, and fell off.

September 1. — Waltham: Michael Rooney, about 65 or 70 years of age, while walking track was struck by locomotive, receiving serious injuries to head.

September 3. — Waltham: William Kelly, about twelve years of age, was stealing a ride on steps of a passenger-train for a short distance as train was pulling out from station. He either fell or was pulled off by a young companion, and car wheel ran over his right ankle. He was removed to Waltham hospital, and right foot was amputated.

September 7. — Fitchburg: Ernest L. Noera attempted to board a moving passenger-train; caught hold of hand railing on car, and before he got on was struck by a switch frame, sustaining injuries about the hips.

September 9. — Wendell: Hiram Hutchins attempted to board a moving freight-train; he fell, and was rolled along some distance. His leg was broken and his head and back bruised. He was not an employee, and had no right on track or train.

September 15. — Athol: H. Brunell, in attempting to jump on a moving passenger-train, fell off; both legs were cut off by being run over by wheels. He died 1.30 A.M., Sept. 16, 1888. The train was well under way when Brunell started on the run from the street to catch it. He had a large bull-dog with him, and when he got near the train he picked up the dog in his arms and attempted to get on; the dog was struggling, and probably caused Brunell to lose his hold or balance.

September 22. — Boston: L. Hammond, freight brakeman, while coupling cars got his right hand caught between deadwoods. Taken to Massachusetts General Hospital; fore-finger and thumb amputated at first joint.

September 24. — Greenfield: Ashton Griswold, while walking over crossing, was struck by engine; no bones broken; not seriously injured. The gates were down.

General Information.	
Maximum weight of locomotives in working order, . .	58.3 tons.
Average weight of locomotives in working order, . . .	39 "
Maximum weight of tenders full of fuel and water, . .	35 "
Average weight of tenders full of fuel and water, . . .	26¼ "
Maximum weight of passenger-cars, ...	23 "
Average weight of passenger-cars, ...	20 "

Average weight of mail and baggage cars,	18 tons.
Average weight of 8-wheel box freight-cars,	10 "
Average weight of 4-wheel box freight-cars,	4½ "
Average weight of 8-wheel platform-cars,	7½ "
Average weight of 4-wheel platform-cars,	3 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	46 feet 9 in.
Total length of heaviest engine and tender over all,	57 " 9 "
Number of miles of telegraph owned by company (entire road),	131 miles.
What telegraph companies own a line on your right of way, and how many miles does each own? Western Union Telegraph Company,	230 "
Number of miles of road *operated* by your company not furnished with telegraph facilities: —	
From Ashburnham Junction to Ashburnham,	2.59 "

BRIDGES BUILT WITHIN THE YEAR IN MASSACHUSETTS.

LOCATION.	KIND.	MATERIAL.	LENGTH.	WHEN BUILT.
West Fitchburg,	Plate Girder.	Iron.	25 feet.	1887.
Greenfield,	Pin Truss.	Iron and Steel.	550 "	1888.
Bardwell's Ferry,	" "	" "	420 "	1888.
Buckland,	" "	" "	72 "	1887.
Williamstown,	" "	" "	90 "	1887.

BRIDGES.

Number of trestle bridges of 25 feet length and upwards,*	13
Aggregate length of same for single track (881 feet).	
Aggregate length of same for double track (904 feet).	
Aggregate length of same for triple track (2,427 feet).	
Number of spans of stone bridges of 25 feet and upwards,*	1
Aggregate length of same for single track (25 feet).	
Number of spans of iron bridges of 25 feet and upwards,	67
Aggregate length of same for single track (540 feet).	
Aggregate length of same for double track (3,510 feet).	
Aggregate length of same for triple track (45 feet).	
Number of spans of timber bridges of 25 feet and upwards,*	5
Aggregate length of same for single track (138 feet).	
Aggregate length of same for triple track (44 feet).	
Number of crossings of highways at grade,*	203
Number of crossings of highways over railroad,	24
Number of crossings of highways under railroad,	16
Number of highway bridges 18 feet above track,	8
Number of highway bridges less than 18 feet above track,	16
Height of lowest bridge above the rail,	14 ft. 6 in.
Number of crossings at which gates or flagmen are maintained,	83
Number of crossings at which electric signals are maintained,*	28
Number of crossings at which there are neither signals nor flagmen,*	120
Number of railroad crossings at grade (specifying each):*	7
Boston & Maine.	
Old Colony (Concord).	
Old Colony (Fitchburg).	
Eastern.	
Boston & Albany.	
Worcester, N. & R. (Ayer).	
Worcester, N. & R. (Worcester).	

* In Massachusetts, on miles road owned.

Number of railroad crossings over other railroads (specifying each): *		1
Boston & Albany (North Adams).		
Number of railroad crossings under other railroads (specifying each): *		4
Boston & Lowell.		
Central Massachusetts (Hudson).		
Central Massachusetts (Weston).		
Central Massachusetts (West Cambridge).		
Rates of Fare, etc.		
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,		2.01 cents.
Average rate of fare per mile *received* from passengers to and from other roads,		2.18 "
Average rate of fare per mile for season-ticket passengers,		0.71 "
Average rate of fare per mile *received* from *all* passengers,		1.97 "
Average rate of local freight per ton per mile,		2.96 "
Average rate of freight per ton per mile *received* from freight to and from other roads,		0.86 "
Average rate of freight per ton per mile *received* from *all* freight,		1.09 "
Relating to Passengers.		
Passengers to Boston (including season),		1,749,272
Passengers from Boston (including season),		1,730,909
Season-ticket passengers to and from Boston,		166,904
Capital Stock.		
Capital stock authorized by charter: $100,000 per mile for double track; $70,000 per mile for single track; $3,000,000 for terminal at Boston.		
Capital stock authorized by votes of company,		$20,775,100 00
Capital stock issued: common, $7,000,000; preferred, $13,775,100 (number of shares, 205,251); amount paid in,		$20,525,100 00
Total amount paid in, as per Books of the Company,		$20,525,100 00
Total number of stockholders (common, 2; preferred, 3.917),	3,919	
Number of stockholders in Massachusetts: (common, 1; preferred, 2,923),	2,924	
Amount of stock held in Massachusetts (common, $5,000,000; preferred, $7,532,200),	$12,532,200 00	
Debt.		
Funded debt, as follows: —		
Plain bonds due April 1, 1894, rate of interest 7 per cent.,		$500,000 00
Interest paid on same during year,	$35,000 00	
Plain bonds due Oct. 1, 1897, rate of interest 6 per cent.,		500,000 00
Interest paid on same during year,	$30,000 00	
Plain bonds due Oct. 1, 1899, rate of interest 5 per cent.,		500,000 00
Interest paid on same during year,	$25,000 00	
Plain bonds due Oct. 1, 1900, rate of interest 5 per cent.,		500,000 00
Interest paid on same during year,	$25,000 00	
Plain bonds due Oct. 1, 1901, rate of interest 5 per cent.,		500,000 00
Interest paid on same during year,	$25,000 00	
Plain bonds due April 1, 1902, rate of interest 5 per cent.,		500,000 00
Interest paid on same during year,	$25,000 00	
Plain bonds due April 1, 1903, rate of interest 5 per cent.,		500,000 00
Interest paid on same during year,	$25,000 00	

* In Massachusetts, on miles road owned.

Plain bonds due March 1, 1904, rate of interest 4 per cent.,	$500,000 00
Interest paid on same during year, . . $20,000 00	
Plain bonds due June 1, 1905, rate of interest 4 per cent., .	500,000 00
Interest paid on same during year, . . $20,000 00	
Plain bonds due Feb. 1, 1937, rate of interest 3 per cent., .	5,000,000 00
Interest paid on same during year, . . $150,000 00	
Plain bonds due April 1, 1907, rate of interest 4 per cent., .	1,250,000 00
Interest paid on same during year, . . $50,000 00	
Plain bonds due Sept. 1, 1897, rate of interest 4½ per cent.,	2,250,000 00
Interest paid on same during year, . . $88,282 55	
Plain bonds due May 1, 1908, rate of interest 5 per cent., .	2,000,000 00
Interest paid on same during year, . . $41,462 39	
B. B. & G. R. R. first mortgage bonds due April 1, 1893, rate of interest 7 per cent., ...	91,300
Interest paid on same during year, . . $6,391 00	
B. B. & G. R. R. first mortgage bonds due April 1, 1893, rate of interest 5 per cent., ...	299,700
Interest paid on same during year, . . $14,985 00	
B. B. & G. R. R. second mortgage bonds due July 1, 1895, rate of interest 3 per cent., ...	186,300
Interest paid on same during year, . . $5,589 00	
B. B. & G. R. R. third mortgage bonds due July 1, 1895, rate of interest 6 per cent., ...	57,300 00
Interest paid on same during year, . . . $3,438 00	
Ashburnham R. R. first mortgage bonds due June 1, 1888, rate of interest 6 per cent. (matured and paid).	
Interest paid on same during year, . . . $240 00	
H. T. D. & E. Co.'s mortgage note due April 5, 1892, rate of interest 4 per cent., ...	500,000 00
Interest paid on same during year, . . $20,000 00	
B. H. T. & W. Ry. debentures due Sept. 1, 1903, rate of interest 5 per cent., ...	1,400,000 00
Interest paid on same during year, . . $70,000 00	
TOTAL AMOUNT OF FUNDED DEBT, ...	$17,534,600 00

NAME AND RESIDENCE OF OFFICERS.

E. B. Phillips, *President*, Brookline, Mass. Geo. A. Torrey, *General Counsel*, Boston, Mass. John Whitmore, *General Traffic Manager*, Boston, Mass. C. S. Anthony, *Auditor*, Waltham, Mass. John Adams, *General Superintendent*, Boston, Mass. C. L. Hartwell, *General Freight Agent*, Waltham, Mass. J. R. Watson, *General Passenger Agent*, Boston, Mass. Dan'l A. Gleason, *Treasurer*, West Medford, Mass. Thomas Whittemore, *Clerk of Corporation*, Cambridge, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

E. B. Phillips, Brookline, Mass. Robert Codman, Boston, Mass. Rodney Wallace, Fitchburg, Mass. Franklin N. Poor, Somerville, Mass. Chas. T. Crocker, Fitchburg, Mass. John Quincy Adams, Quincy, Mass. David P. Kimball, Boston, Mass. Jas. Renfrew, Jr., Adams, Mass. Augustus Kountze, New York City. Dan'l Robinson, Troy, N. Y. Fred'k L. Ames, Easton, Mass. Geo. Heywood, Concord, Mass. W. S. Webb, New York City. Francis Smith, Rockland, Me.

PROPER ADDRESS OF THE COMPANY.
FITCHBURG RAILROAD COMPANY,
BOSTON, MASS.

E. B. PHILLIPS,
ROBERT CODMAN,
RODNEY WALLACE,
FRANKLIN N. POOR,
C. T. CROCKER,
J. Q. ADAMS,
DAVID P. KIMBALL,
JAS. RENFREW, JR.,
GEO. HEYWOOD,
Directors.
DAN. A. GLEASON,
Treasurer.
JOHN ADAMS,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, SS. BOSTON, Nov. 20, 1888. Then personally appeared E. B. Phillips, Robert Codman, Rodney Wallace, Franklin N. Poor, C. T. Crocker, J. Q. Adams, David P. Kimball, Jas. Renfrew, Jr., Geo. Heywood, Dan'l A. Gleason and John Adams, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

THOMAS WHITTEMORE,
Justice of the Peace.

REPORT

OF THE

GRAFTON & UPTON RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$9,852 98
Total expense (including taxes),		5,825 59
Net income,		4,027 39
Interest accrued during year:		2,500 00
On funded debt,	$2,500	
Balance for the year (surplus),		1,527 39
Balance at commencement of year,		1,041 67
Balance Sept. 30, 1888 (surplus),		2,569 06
ANALYSIS OF EARNINGS.		
From local passengers,		$5,884 05
express and extra baggage,		518 10
mails,		400 00
Total earnings from passenger department,		6,802 15
From local freight,		3,050 83
Total earnings from freight department,		3,050 83
TOTAL TRANSPORTATION EARNINGS,		9,852 98
TOTAL INCOME FROM ALL SOURCES,		$9,852 98
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,042 00
Stationery and printing,		51 15
Contingencies and miscellaneous,		186 55
Repairs of road-bed and track,		626 60
Repairs of locomotives,		42 32
Fuel for locomotives,		1,000 57
Water supply,		84 38
Oil and waste,		48 32
Locomotive service,		1,102 35
Repairs of passenger-cars,		16 73
Passenger-train service,		1,243 25
Passenger-train supplies,		14 37
TOTAL OPERATING EXPENSES,		$5,458 59
Taxes,		367 00
TOTAL OPERATING EXPENSES AND TAXES,		$5,825 59
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
TOTAL FOR CONSTRUCTION (by contract),		$90,000 00
TOTAL FOR EQUIPMENT (by contract),		10,000 00
TOTAL CHARGES TO PROPERTY ACCOUNTS,		$100.000 00
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		100,000 00

Balance Sheet Sept. 30, 1888.

Assets.		
Cost of road,	$173,594 51	
Cost of equipment,	25,025 69	
Total Permanent Investments,		$198,620 20
Cash,	$2,867 36	
Materials and supplies,	981 50	
Debit balances,	100 00	
Total Cash Assets,		3,948 86
Total Assets,		$202,569 06
Liabilities.		
Capital stock,		$100,000 00
Funded debt,		100,000 00
Profit & Loss balance,		2,569 06
Total Liabilities,		$202,569 06

Mileage, Traffic, Etc.	
Passenger-train mileage,	16,902
Freight-train mileage,	6,100
Total Revenue-Train Mileage,	23,002
Total Train Mileage,	23,002
Number of local passengers (including season),	57,194
Total Number of Passengers carried,	57,194
Local passenger mileage (local passengers carried one mile),	171,582
Total Passenger Mileage,	171,582
Number tons local freight,	5,053
Total Number Tons Freight carried,	5,053
Local freight mileage (tons local freight carried one mile),	15,159
Total Freight Mileage,	15,159
Average number of persons employed,	8
Description of Road.	
Main line of road from North Grafton to Grafton Centre,	3.0 miles.
Main line of road in Massachusetts,	3.0 "
Total road belonging to this company,	3.0 "
Sidings and other tracks not above enumerated,	0.1 "
Same in Massachusetts,	0.1 "
Total Length of Track computed as Single Track,	3.1 "
Same in Massachusetts,	3.1 "
Total length of steel rails in tracks, not including steel-top rails,	3.1 "
[Weights per yard, 40 and 50 pounds.]	
Total miles of road operated by this company,	3.0 "
Total miles of road operated by this company in Massachusetts,	3.0 "
Number of stations in Massachusetts on all *roads operated* by this company,	1
Number of stations on all *roads owned* by this company,	1
Same in Massachusetts,	1
Equipment.	
Number of locomotives,	2
Number of passenger-cars,	1
Number of freight-cars (basis of 8 wheels),	1
Number of other cars,	3

Bridges.		
Number of trestle bridges of 25 feet length and upward,		1
Aggregate length of same for single track (50 feet).		
Number of crossings of highways at grade,		9
Number of crossings at which gates or flagmen are maintained,		1
Number of crossings at which there are neither signals nor flagmen,		8
Capital Stock.		
Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock issued (number of shares 1,000); amount paid in,		$100,000 00
Total Amount paid in, as per Books of the Co.,		100,000 00
Total number of stockholders,	13	
Number of stockholders in Massachusetts,	13	
Amount of stock held in Massachusetts,	$100,000 00	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due May 1, 1908, rate of interest 5½ per cent.,		$100,000 00
Interest paid on same during year,	$2,500	

Name and Residence of Officers.

Edward P. Usher, *President*, Lynn, Mass. Charles B. Powers, *Superintendent*, Grafton, Mass. Alden A. Howe, *Treasurer*, Grafton, Mass. Albert G. Morse, *Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors Last Elected.

Edward P. Usher, Lynn, Mass. J. Albert Walker, Boston, Mass. Horace S. Warren, Grafton, Mass. Henry B. Sprague, Lynn, Mass. Herbert F. Allen, Grafton, Mass. Albert G. Morse, Boston, Mass. Daniel N. Gibbs, Grafton, Mass. Frank W. Morse, Boston, Mass. George W. Fisher, Grafton, Mass.

Proper Address of the Company.

GRAFTON & UPTON RAILROAD COMPANY,

Grafton, Mass.

EDWARD P. USHER,
ALBERT G. MORSE,
HERBERT F. ALLEN,
DANIEL N. GIBBS,
HORACE S. WARREN,
Directors.

ALDEN A. HOWE,
Treasurer.

CHARLES B. POWERS,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. GRAFTON, Nov. 1, 1888. Then personally appeared Herbert F. Allen, Daniel N. Gibbs, Horace S. Warren, Alden A. Howe and Charles B. Powers, and severally made oath to the truth of the foregoing statement by them subscribed, according their best knowledge and belief.

HENRY F. WING,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 3, 1888. Then personally appeared Edward P. Usher and Albert G. Morse, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WILLIAM E. ROGERS,
Justice of the Peace.

REPORT

OF THE

HOLYOKE & WESTFIELD RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to the New Haven & Northampton Company, and is operated by the New York, New Haven & Hartford Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$27,289 05
Total expense (including taxes),		2,156 36
Net income,		25,132 69
Interest accrued during year:		17,600 00
On funded debt,	$17,600 00	
Dividends declared (2½ per cent.),		6,500 00
Balance for the year (surplus),		1,032 69
Balance at commencement of year,		10,012 67
Balance Sept. 30, 1888 (surplus),		11,045 36.
ANALYSIS OF EARNINGS.		
Rents for use of road,		$26,848 82
Income from all other sources, viz.:		440 23
Miscellaneous,	$440 23	
TOTAL INCOME FROM ALL SOURCES,		$27,289 05
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$155 00
Contingencies and miscellaneous,		33 28
TOTAL EXPENSES,		$188 28
Taxes,		1,968 08
TOTAL EXPENSES AND TAXES,		$2,156 36

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$522,268 89
Cash,	$8,494 45	
Due from agents and companies,	282 02	
TOTAL CASH ASSETS,		8,776 47
TOTAL ASSETS,		$531,045 36

Liabilities.	
Capital stock,	$260,000 00
Funded debt,	260,000 00
Profit & Loss balance,	11,045 36
Total Liabilities,	$531,045 36

Description of Road.	
Main line of road from Holyoke to Westfield,	10.32 miles.
Main line of road in Massachusetts,	10.32 "
Branches owned by company, viz.:	
Side tracks to mills (single track),	6.90 "
Total length of branches owned by company,	6.90 "
Total length of branches owned by company in Massachusetts,	6.90 "
Total road belonging to this company,	17.22 "
Total Length of Track, computed as Single Track,	17.22 "
Same in Massachusetts,	17.22 "
Bridges.	
Number of crossings of highways at grade,	5
Number of crossings of highways over railroad,	3
Number of crossings of highways under railroad,	9
Number of highway bridges 18 feet above track,	3
Number of crossings at which gates or flagmen are maintained,	2
Number of crossings at which there are neither signals nor flagmen,	3

Capital Stock.		
Capital stock authorized by charter,	$350,000 00	
Capital stock authorized by votes of company,	260,000 00	
Capital stock issued (number of shares, 2,600); amount paid in,		$260,000 00
Total Amount paid in, as per Books of the Co.,		260,000 00
Total number of stockholders,	15	
Number of stockholders in Massachusetts,	14	
Amount of stock held in Massachusetts,	$240,000 00	

Debt.		
Funded debt, as follows:—		
First mortgage bonds due April, 1891, rate of interest 7 per cent.,		$200,000 00
Interest paid on same during year,	$14,000 00	
Second mortgage bonds due April, 1898, rate of interest 6 per cent.,		60,000 00
Interest paid on same during year,	$3,600 00	
Total Amount of Funded Debt,		$260,000 00

Name and Residence of Officers.

Timothy Merrick, *President*, Holyoke, Mass. James Ramage, *Vice-President*, Holyoke, Mass. Wm. A. Prentiss, *Treasurer*, Holyoke, Mass. T. B. O'Donnell, *Clerk of Corporation*, Holyoke, Mass.

Name and Residence of Directors last Elected.

Timothy Merrick, James Ramage, W. B. C. Pearsons, J. H. Newton, James E. Delaney, Dennis J. Landers, E. Lovering, H. B. Spencer, John H. Wright, — all of Holyoke, Mass.

PROPER ADDRESS OF THE COMPANY.

HOLYOKE & WESTFIELD RAILROAD COMPANY.

HOLYOKE, MASS.

JAMES H. NEWTON,
H. B. SPENCER,
C. LOVERING,
W. B. C. PEARSONS,
J. E. DELANEY,
Directors.

WILLIAM A. PRENTISS,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

HAMPDEN, ss. Nov. 30, 1888. Then personally appeared the above-named James H. Newton, H. B. Spencer, C. Lovering, W. B. C. Pearsons, J. E. Delaney and William A. Prentiss, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

T. B. O'DONNELL,
Justice of the Peace.

REPORT

OF THE

HOOSAC TUNNEL & WILMINGTON RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[A narrow-gauge road.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$15,673 59
Total expense (including taxes),		15,252 16
Net income,		421 43
Interest accrued during year:		2,356 58
On other debt,	$2,356 58	
Balance for the year (deficit),		1,935 15
Balance at commencement of year (deficit),	$2,050 00	
Deduct: —		
Error in last year's interest,	925 00	
		1,125 00
Balance at commencement of year as so changed,		
Balance Sept. 30, 1888 (deficit),		3,060 15
ANALYSIS OF EARNINGS.		
From local passengers,		$2,718 15
express and extra baggage,		196 15
mails,		483 08
Total earnings from passenger department,		3,397 38
From local freight,		12,276 21
Total earnings from freight department,		12,276 21
TOTAL INCOME FROM ALL SOURCES,		15,673 59
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,200 00
Legal expenses,		13 70
Insurance,		105 50
Stationery and printing,		97 96
Outside agencies and advertising,		18 00
Contingencies and miscellaneous,		2,705 18
Renewal of rails,		987 63
[Number tons steel laid, $24\frac{700}{2240}$.]		
Renewal of ties,		270 00
[Number laid, 1,800.]		
Repairs of road-bed and track,		5,312 18
Fuel for locomotives,		1,186 34
[Tons of coal, $273\frac{1}{2}$; cords of wood, 105.]		
Oil and waste,		174 93
Locomotive service,		1,171 00
Passenger-train service,		476 08
Telegraph expenses,		15 21
Loss and damage, freight and baggage,		7 30
Agents and station service,		1,430 04
TOTAL OPERATING EXPENSES,		$15,171 05
Taxes,		81 11
TOTAL OPERATING EXPENSES AND TAXES,		$15,252 16

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.	
Grading and masonry,	$8,405 37
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,	8,405 37

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$103,405 37
Profit & Loss balance,		3,060 15
TOTAL ASSETS,		$106,465 52
LIABILITIES.		
Capital stock,		$50,000 00
Unfunded debt, viz.:		
Interest unpaid,	$3,060 15	
Notes payable,	45,000 00	
Vouchers and accounts,	8,405 37	
		56,465 52
TOTAL LIABILITIES,		$106,465 52

MILEAGE, TRAFFIC, ETC.	
Passenger-train mileage,	14,085
TOTAL TRAIN MILEAGE (mixed trains),	14,085
Number of local passengers (including season),	7,300
TOTAL NUMBER OF PASSENGERS CARRIED,	7,300
Local passenger mileage (local passengers carried one mile),	62,003
TOTAL PASSENGER MILEAGE,	62,003
Number tons local freight,	$11,921\frac{1800}{2000}$
TOTAL NUMBER TONS FREIGHT CARRIED,	$11,921\frac{1800}{2000}$
Local freight mileage (tons local freight carried one mile),	$109,265\frac{700}{2000}$
TOTAL FREIGHT MILEAGE,	$109,265\frac{700}{2000}$
Average number of persons employed,	16
DESCRIPTION OF ROAD.	
Main line of road from Hoosac Tunnel, Mass., to Readsboro, Vt.,	11.0 miles.
Main line of road in Massachusetts,	8.0 "
Main line of road in Vermont,	3.0 "
Total road belonging to this company,	11.0 "
Sidings and other tracks not above enumerated,	1.0 "
Same in Massachusetts,	.5 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	12.0 "
Same in Massachusetts,	8.5 "
Total length of steel rails in tracks, not including steel-top rails,	12.0 "
[Weights per yard, 30 pounds.]	
Total miles of road operated by this company,	11.0 "
Total miles of road operated by this company in Massachusetts,	8.0 "
Number of stations in Massachusetts on all *roads operated* by this company,	4
Number of telegraph offices in same,	1
Number of stations on all *roads owned* by this company,	4
Same in Massachusetts,	4

EQUIPMENT.		
Number of locomotives (leased, 2),		2
Number of combination (leased, 4),		4
Number of freight-cars (basis of 8 wheels; leased, 29),		29
GENERAL INFORMATION.		
Maximum weight of locomotives in working order (1),		15 tons.
Average weight of locomotives in working order (1, 12 tons),		13½ "
Maximum weight of combination cars, estimate,		16,000 lbs.
Average weight of combination cars, estimate,		10,000 "
Average weight of 8-wheel box freight-cars, estimate,		12,000 "
Average weight of 8-wheel platform cars, estimate,		8,000 "
CAPITAL STOCK.		
Capital stock authorized by charter,	$50,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock issued (number of shares, 500); amount paid in,		$50,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		50,000 00
Total number of stockholders,	6	
Number of stockholders in Massachusetts,	5	
Amount of stock held in Massachusetts,	$49,700 00	

NAME AND RESIDENCE OF OFFICERS.

Daniel H. Newton, *President*, Holyoke, Mass. James Ramage, *Vice-President*, Holyoke, Mass. Moses Newton, *Auditor and Superintendent*, Holyoke, Mass. John C. Newton, *Treasurer*, Holyoke, Mass. Ernest P. Cox, *Clerk of Corporation*, Holyoke, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Daniel H. Newton, Holyoke, Mass. Moses Newton, Holyoke, Mass. John C. Newton, Holyoke, Mass. James Ramage, Holyoke, Mass. George W. Millar, New York, N. Y.

PROPER ADDRESS OF THE COMPANY.

HOOSAC TUNNEL & WILMINGTON RAILROAD COMPANY,
HOLYOKE, MASS.

DANIEL H. NEWTON,
JOHN C. NEWTON,
MOSES NEWTON,
Directors.
JOHN C. NEWTON,
Treasurer.
MOSES NEWTON,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

HAMPDEN, ss. HOLYOKE, Oct. 16, 1888. Then personally appeared John C. Newton, treasurer and director, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

FRED. F. PARTRIDGE,
Notary Public.

Commonwealth of Massachusetts.

Hampden, ss. Holyoke, Nov. 6, 1888. Then personally appeared Daniel H. Newton, director, and Moses Newton, director and superintendent, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

FRED. F. PARTRIDGE,
Notary Public.

REPORT

OF THE

HORN POND BRANCH RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This is merely the track of an ice company, and is used for the transportation of its ice. It is operated by the Boston & Maine Railroad, Lowell system.]

Balance Sheet Sept. 30, 1888.

ASSETS.	
Cost of road,	$15,238 46
TOTAL ASSETS,	$15,238 46
LIABILITIES.	
Capital stock,	$20,000 00
Profit & Loss balance,	13,238 46
TOTAL LIABILITIES,	$15,238 46

DESCRIPTION OF ROAD.

Main line of road from Woburn to Horn Pond,	.663 mile.
Main line of road in Massachusetts,	.663 "
Total road belonging to this company,	.663 "
Sidings and other track not above enumerated,	.076 "
Same in Massachusetts,	.076 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	.739 "
Same in Massachusetts,	.739 "

CAPITAL STOCK.

Capital stock authorized by charter,	$40,000 00	
Capital stock authorized by votes of company,	10,000 00	
Capital stock issued (number of shares, 100); amount paid in,		$2,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		$2,000 00
Total number of stockholders,	9	
Number of stockholders in Massachusetts,	9	
Amount of stock held in Massachusetts,	$2,000 00	

NAME AND RESIDENCE OF OFFICERS.

Horace O. Bright, *President*, Cambridge, Mass. Frank J. Bartlett, *Treasurer*, Malden, Mass. Wm. H. Preston, *Clerk of Corporation*, Somerville, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Horace O. Bright, Cambridge, Mass. Charles O. Gage, Arlington, Mass. Nelson Bartlett, Boston, Mass. Francis Hall, Boston, Mass. James H. Reed, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

HORN POND BRANCH RAILROAD COMPANY,

No. 76 STATE ST., BOSTON, MASS.

H. O. BRIGHT,
JAS. H. REED,
NELSON BARTLETT,
FRANCIS HALL,
Directors.

FRANK J. BARTLETT,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Dec. 5, 1888. Then personally appeared H. O. Bright, Jas. H. Reed, N. Bartlett and Francis Hall, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

E. P. COLLIER,
Justice of the Peace.

REPORT

OF THE

LOWELL & ANDOVER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Maine Railroad.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$53,571 37
Total expense (including taxes),		5,147 55
Net income,		48,423 82
Interest accrued during year:		10,680 00
On funded debt,	$10,680 00	
Dividends declared (7 per cent.),		35,000 00
Balance for the year (surplus),		2,743 82
Balance at commencement of year,		117,778 63
Balance Sept. 30, 1888 (surplus),		120,522 45
ANALYSIS OF EARNINGS.		
Rents for use of road,		$52,500 00
Income from all other sources, viz.:		1,071 37
Interest on daily balance in bank,	$1,071 37	
TOTAL INCOME FROM ALL SOURCES,		$53,571 37
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$125 00
Legal expenses,		2,115 40
Contingencies and miscellaneous,		2,883 66
TOTAL EXPENSES,		$5,124 06
Taxes,		23 49
TOTAL EXPENSES AND TAXES,		$5,147 55
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Land, land damages, and fences,		$12,379 30
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		12,379 30

Balance Sheet Sept. 30, 1888.

ASSETS.	
Cost of road,	$767,075 24
Cash,	31,447 21
TOTAL ASSETS,	$798,522 45

Liabilities.	
Capital stock,	$500,000 00
Funded debt,	178,000 00
Profit & Loss balance,	120,522 45
Total Liabilities,	$798,522 45

Description of Road.	
Main line of road from Lowell to Lowell Junction in Andover,	8.73 miles.
Main line of road in Massachusetts,	8.73 "
Double track on main line,	8.73 "
Same in Massachusetts,	8.73 "
Branches owned by company, viz.:	
To Framingham & Lowell Railroad (single track),	1.15 "
To Boston & Lowell Railroad,	.22 "
Total length of branches owned by company,	1.37 "
Total length of branches owned by company in Massachusetts,	1.37 "
Total road belonging to this company,	10.10 "
Sidings and other tracks not above enumerated,	3.94 "
Same in Massachusetts,	3.94 "
Total Length of Track, computed as Single Track,	22.77 "
Same in Massachusetts,	22.77 "
Total length of steel rails in tracks, not including steel-top rails,	17.46 "
Number of stations on all *roads owned* by this company,	6
Same in Massachusetts,	6
Bridges.	
Number of trestle bridges of 25 feet length and upwards,	6
Number of spans of iron bridges of 25 feet and upwards,	2
Aggregate length of same for single track (90.7 feet).	
Number of spans of timber bridges of 25 feet and upwards,	7
Number of crossings of highways at grade,	11
Number of crossings of highways over railroad,	2
Number of crossings of highways under railroad,	1
Number of highway bridges 18 feet above track,	2
Height of lowest bridge above the rail,	18 feet.
Number of crossings at which gates or flagmen are maintained,	10
Number of crossings at which there are neither signals nor flagmen,	2
Number of railroad crossings over other railroads (specifying each),	2
One crossing over the Boston & Lowell and Lowell & Framingham in the city of Lowell.	
One crossing over the Lowell & Lawrence Railroad in the town of Tewksbury.	

Capital Stock.		
Capital stock authorized by charter,	Unlimited.	
Capital stock authorized by votes of company,	$500,000 00	
Capital stock issued (number of shares, 5,000); amount paid in,		$500,000 00
Total Amount paid in, as per Books of the Co.,		500,000 00
Total number of stockholders,	143	
Number of stockholders in Massachusetts,	130	
Amount of stock held in Massachusetts,	$462,600 00	
Debt.		
Funded debt, as follows: —		
Bonds due July 1, 1894, rate of interest 6 per cent.,		$178,000 00
Interest paid on same during year,	$10,680 00	

NAME AND RESIDENCE OF OFFICERS.

Frederick Ayer, *President*, Lowell, Mass. Benj. Walker, *Treasurer and Clerk of Corporation*, Lowell, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Frederick Ayer, Lowell, Mass. Arthur P. Bonney, Lowell, Mass. Jacob Nichols, Lowell, Mass. Frederick F. Ayer, Lowell, Mass. Oliver H. Moulton, Lowell, Mass. Prescott C. Gates, Lowell, Mass. E. M. Sargent, Lowell, Mass. George Ripley, Andover, Mass. James T. Furber, Lawrence, Mass. Benj. Walker, Lowell, Mass.

PROPER ADDRESS OF THE COMPANY.

LOWELL & ANDOVER RAILROAD COMPANY,
LOWELL, MASS.

FREDERICK AYER,
PRESCOTT C. GATES,
E. M. SARGENT,
ARTHUR P. BONNEY,
JACOB NICHOLS,
OLIVER H. MOULTON,
Directors.
BENJ. WALKER,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. LOWELL, MASS., Oct. 10, 1888. Then personally appeared Frederick Ayer, Prescott C. Gates, E. M. Sargent, Arthur P. Bonney, Jacob Nichols, Oliver H. Moulton and Benj. Walker, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

SAM'L A. CHASE,
Justice of the Peace.

REPORT

OF THE

LONG BEACH RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[In process of construction.]

[This is virtually a street railway, but has been incorporated under the General Railroad Law, P. S., ch. 112.]

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Bridging,		$188 65
Superstructure, including rails,		4,040 12
Engineering, agencies, salaries, and other expenses during construction,		669 12
TOTAL FOR CONSTRUCTION,		$4,867 89
Passenger, mail and baggage cars,		2,175 00
TOTAL FOR EQUIPMENT,		2,175 00
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		7,042 89
Balance Sheet Sept. 30, 1888.		
ASSETS.		
Cost of road,	$4,867 89	
Cost of equipment,	2,175 00	
TOTAL PERMANENT INVESTMENTS,		$7,042 89
Cash,		339 95
TOTAL ASSETS,		$7,382 84
LIABILITIES.		
Capital stock (paid in),		$5,382 84
Unfunded debt, viz.:		2,000 00
Notes payable,	$2,000 00	
TOTAL LIABILITIES,		$7,382 84
CAPITAL STOCK.		
Capital stock authorized by charter,	$30,000 00	
Capital stock authorized by votes of company,	30,000 00	
Capital stock paid in on shares not issued (number of shares, 110),		$5,382 84
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		5,382 84
Total number of stockholders,	9	
Number of stockholders in Massachusetts,	9	
Amount of stock held in Massachusetts,	$5,382 84	

NAME AND RESIDENCE OF OFFICERS.

Morris C. Fitch, *President*, Gloucester, Mass. Henri N. Woods, *Treasurer*, Rockport, Mass. D. S. Presson, *Clerk of Corporation*, Gloucester, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Morris C. Fitch, Gloucester, Mass. F. W. Homans, Gloucester, Mass. Thomas Hodge, Gloucester, Mass. D. S. Presson, Gloucester, Mass. Henri N. Woods, Rockport, Mass.

PROPER ADDRESS OF THE COMPANY.

LONG BEACH RAILROAD COMPANY,
GLOUCESTER, MASS.

THOMAS HODGE,
D. S. PRESSON,
Directors.

HENRI N. WOODS,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. GLOUCESTER, Dec. 7, 1888. Then personally appeared Thomas Hodge, D. S. Presson and H. N. Woods, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

AARON PARSONS,
Justice of the Peace.

REPORT

OF THE

MARTHA'S VINEYARD RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[A narrow-gauge road.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$5,131 75
Total expense (including taxes),		3,937 24
Net income,		1,194 51
Interest accrued during year,		2,000 00
Interest on funded debt,	$2,000 00	
Balance for the year (deficit),		805 49
Balance at commencement of year,		27,904 94
Balance Sept. 30, 1888 (surplus),		27,099 45
ANALYSIS OF EARNINGS.		
From local passengers,		$4,605 25
From mails,		175 00
Total earnings from passenger department,		4,780 25
From local freight,		348 30
Total earnings from freight department,		348 30
TOTAL TRANSPORTATION EARNINGS,		5,128 55
Income from all other sources, viz.:		3 20
Grass sold,	$2 50	
Oil sold,	70	
TOTAL INCOME FROM ALL SOURCES,		$5,131 75
ANALYSIS OF EXPENSES.		
Legal expenses,		$85 33
Insurance,		76 00
Stationery and printing,		38 65
Outside agencies and advertising,		92 00
Contingencies and miscellaneous,		17 20
Repairs of buildings,		8 70
Repairs of road-bed and track,		1,415 43
Repairs of locomotives,		271 01
Fuel for locomotives,		230 07
[Tons of coal, 41.]		
Oil and waste,		62 78
Locomotive service,		564 30
Repairs of passenger-cars,		87 30
Passenger-train service,		304 50
Loss and damage, property and cattle,		35 00
Rent,		100 00
Agents and station service,		506 50
Station supplies,		18 40
TOTAL OPERATING EXPENSES,		3,913 17
Taxes,		24 07
TOTAL OPERATING EXPENSES AND TAXES,		$3,937 24

Balance Sheet Sept. 30, 1888.

Assets.		
Cost of road,	$91,512 09	
Cost of equipment,	14,086 00	
Lands in Edgartown,	3,371 24	
Furniture,	130 39	
Total Permanent Investments,		$109,099 72
Cash,	$2 37	
Due from agent,	1,325 01	
Due from president,	575 17	
Debit balances,	129 18	
Total Cash Assets,		2,031 73
Total Assets,		$111,131 45
Liabilities.		
Capital stock,		$40,000 00
Funded debt,		40,000 00
Unfunded debt, viz.:		4,032 00
Interest unpaid,	$4,000 00	
Dividends unpaid,	6 00	
Vouchers and accounts,	26 00	
Profit & Loss balance,		27,099 45
Total Liabilities,		$111,131 45

Mileage, Traffic, etc.	
Passenger-train mileage,	5,911
Total Revenue-train Mileage,	5,911
Total Train Mileage,	5,911
Number of local passengers (including season),	19,203
Total Number of Passengers carried,	19,203
Local passenger mileage (local passengers carried one mile),	134,421
Total Passenger Mileage,	134,421
Average number of persons employed,	10
Description of Road.	
Main line of road from Oak Bluffs to Katama,	8.33 miles.
Main line of road in Massachusetts,	8.33 "
Branches owned by company, viz.:	
Katama to South Beach (single track),	0.45 "
Total length of branches owned by company,	0.45 "
Total road belonging to this company,	8.78 "
Sidings and other tracks not above enumerated,	0.50 "
Same in Massachusetts,	0.50 "
Total Length of Track, computed as Single Track,	9.28 "
Same in Massachusetts,	9.28 "
Total miles of road operated by this company,	8.78 "
Total miles of road operated by this company in Massachusetts,	8.78 "
Equipment.	
Number of locomotives,	1
Number of passenger-cars,	3
Number of baggage, mail and express cars,	1

General Information.		
Maximum weight of locomotives in working order,		9 tons.
Maximum weight of passenger-cars,		7 "
Average weight of passenger-cars,		5.2 "
Bridges.		
Number of trestle bridges of 25 feet length and upwards,		1
Number of crossings of highways at grade,		4
Number of crossings at which there are neither signals nor flagmen,		4
Capital Stock.		
Capital stock authorized by charter,	$40,000 00	
Capital stock authorized by votes of the company,	40,000 00	
Capital stock issued (number of shares, 400); amount paid in,		$40,000 00
Total Amount paid in, as per Books of the Co.,		40,000 00
Total number of stockholders,	26	
Number of stockholders in Massachusetts,	24	
Amount of stock held in Massachusetts,	$33,700	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due Nov. 19, 1894, rate of interest 5 per cent.,		$40,000 00

Name and Residence of Officers.

E. P. Carpenter, *President*, Foxborough, Mass. I. W. Lane, *Superintendent*, Foxborough, Mass. J. T. Pease, *Treasurer*, Edgartown, Mass. I. H. Hills, *Clerk of Corporation*, Boston, Mass.

Proper Address of the Company.

MARTHA'S VINEYARD RAILROAD COMPANY,
Edgartown, Mass.

E. P. CARPENTER,
LABAN PRATT,
HENRY RIPLEY,
Directors.
J. T. PEASE,
Treasurer.

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Nov. 27, 1888. Then personally appeared the above-named E. P. Carpenter and Laban Pratt, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WILLIAM M. STOCKBRIDGE,
Notary Public.

Commonwealth of Massachusetts.

Dukes County, ss. Nov. 5, 1888. Personally appeared Henry Ripley and Joseph T. Pease, treasurer, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. H. PEASE,
Notary Public.

REPORT

OF THE

MILFORD, FRANKLIN & PROVIDENCE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the New York & New England Railroad Company.]

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$95,304 77	
Lands and land damage paid,	5,962 87	
TOTAL PERMANENT INVESTMENTS,		$101,267 64
Cash,		75 86
TOTAL ASSETS,		$101,343 50
LIABILITIES.		
Capital stock,		$100,000 00
Unfunded debt, viz.:		1,343 50
Notes payable,	$1,300 00	
Vouchers and accounts,	43 50	
TOTAL LIABILITIES,		$101,343 50

DESCRIPTION OF ROAD.

Main line of road from Bellingham to Franklin,	4.6 miles.
Main line of road in Massachusetts,	4.6 "
Total road belonging to this company,	4.6 "
Sidings and other tracks not above enumerated,	0.407 "
Same in Massachusetts,	0.407 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	5.007 "
Same in Massachusetts,	5.007 "
Number of stations in Massachusetts on all *roads operated* by this company,	1
Number of stations on all *roads owned* by this company,	1
Same in Massachusetts,	1

BRIDGES.

Number of trestle bridges of 25 feet length and upwards,	1
Aggregate length of same for single track (25 feet).	
Number of crossings of highways at grade,	4
Number of highway bridges 18 feet above track,	3
Number of crossings at which there are neither signals nor flagmen,	4

Capital Stock.		
Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock issued (number of shares, 1,000); amount paid in,		$100,000 00
Total Amount paid in, as per Books of the Co.,		100,000 00
Total number of stockholders,	24	
Number of stockholders in Massachusetts,	23	
Amount of stock held in Massachusetts,	$99,000 00	

Name and Residence of Officers.

James P. Ray, *President*, Franklin, Mass. William F. Draper, *Vice-President*, Franklin, Mass. Joseph G. Ray, *Treasurer*, Franklin, Mass. George W. Wiggin, *Clerk of Corporation*, Franklin, Mass.

Name and Residence of Directors last Elected.

James P. Ray, Franklin, Mass. George Draper, Hopedale, Mass. Joseph G. Ray, Franklin, Mass. Moses Farnum, Franklin, Mass. William F. Draper, Hopedale, Mass. E. S. Draper, Hopedale, Mass. E. R. Ray, Franklin, Mass. J. F. Ray, Franklin, Mass. George W. Wiggin, Franklin, Mass. George A. Draper, Hopedale, Mass. J. M. Freeman, Franklin, Mass. Hiram Whiting, North Bellingham, Mass. J. B. Bancroft, Hopedale, Mass.

Proper Address of the Company.

MILFORD, FRANKLIN & PROVIDENCE RAILROAD COMPANY,
Franklin, Mass.

JAMES P. RAY,
JOSEPH G. RAY,
HIRAM WHITING,
JAMES F. RAY,
JAMES M. FREEMAN,
MOSES FARNUM,
GEORGE W. WIGGIN,
Directors.
JOSEPH G. RAY,
Treasurer.

Commonwealth of Massachusetts.

Suffolk, ss. Franklin, Nov. 17, 1888. Then personally appeared James P. Ray, Joseph G. Ray, Hiram Whiting, James F. Ray, James M. Freeman, Moses Farnum and George W. Wiggin, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WILLIAM A. WYCKOFF,
Justice of the Peace.

REPORT

OF THE

MILFORD & WOONSOCKET RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the New York & New England Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total expense (including taxes),		$574 91
Interest accrued during year:		3,211 43
On funded debt,	$1,330 00	
On other debt,	1,881 00	
Balance for the year (deficit),		3,786 34
Balance at commencement of year (deficit),	$21,147 19	
Deduct: received for rail-bender,	50 00	
Balance at commencement of year as so charged,		21,097 19
Balance Sept. 30, 1888 (deficit),		24,883 53
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$405 00
Legal expenses,		25 00
Contingencies and miscellaneous,		144 91
TOTAL EXPENSES,		$574 91

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$171,431 13
Cash,	$7 26	
Due from companies,	22,625 00	
TOTAL CASH ASSETS,		22,632 26
Profit & Loss balance,		24,883 53
TOTAL ASSETS,		$218,946 92
LIABILITIES.		
Capital stock,		$148,600 00
Funded debt,		19,000 00
Unfunded debt, viz.:		51,346 92
Notes payable,	$49,546 92	
Vouchers and accounts,	1,800 00	
TOTAL LIABILITIES,		$218,946 92

Description of Road.		
Main line of road from Bellingham to Ashland,		15.327 miles.
Main line of road in Massachusetts,		15.327 "
Total road belonging to this company,		15.327 "
Sidings and other tracks not above enumerated,		1.900 "
Same in Massachusetts,		1.900 "
Total Length of Track, computed as Single Track,		17.227 "
Same in Massachusetts,		17.227 "
Total length of steel rails in tracks, not including steel-top rails,		5.627 "
Number of stations on all *roads owned* by this company,		4
Same in Massachusetts,		4
Bridges.		
Number of trestle bridges of 25 feet length and upwards,		1
Number of spans of timber bridges of 25 feet and upwards,		1
Number of crossings of highways at grade,		21
Number of crossings of highways over railroad,		1
Number of highway bridges 18 feet above track,		1
Height of lowest bridge above the rail,		21 feet.
Number of crossings at which gates or flagmen are maintained,		4
Number of crossings at which there are neither signals nor flagmen,		17
Capital Stock.		
Capital stock authorized by charter,	$200,000 00	
Capital stock authorized by votes of company,	148,600 00	
Capital stock issued (number of shares, 1,486); amount paid in,		$148,600 00
Total Amount paid in, as per Books of the Co.,		148,600 00
Total number of stockholders,	35	
Number of stockholders in Massachusetts,	33	
Amount of stock held in Massachusetts,	$140,800	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due June 1, 1891, rate of interest 7 per cent.,		$19,000 00
Interest paid on same during year,	$1,330 00	

Name and Residence of Officers.

William F. Draper, *President*, Hopedale, Mass. James E. Walker, *Treasurer*, Milford, Mass. James R. Davis, *Clerk of Corporation*, Mendon, Mass.

Name and Residence of Directors last Elected.

Wm. F. Draper, Hopedale. Charles F. Claflin, Milford. Eben S. Draper, Hopedale. John P. Daniels, Milford. James P. Ray, Franklin. George E. Armstrong, Boston.

Proper Address of the Company.

MILFORD & WOONSOCKET RAILROAD COMPANY,
Milford, Mass.

WM. F. DRAPER,
JOHN P. DANIELS,
C. F. CLAFLIN,
E. S. DRAPER,
Directors.
JAMES E. WALKER,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. MILFORD, Oct. 23, 1888. Then personally appeared William F. Draper, John P. Daniels, Charles F. Claflin, Eben S. Draper and James E. Walker, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JESSE A. TAFT,
Justice of the Peace.

REPORT

OF THE

MONADNOCK RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Cheshire Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$12,000 00
Total expense (salaries),		59 50
Net income,		11,940 50
Interest accrued during year:		2,356 67
On funded debt,	$2,356 67	
Dividends declared (5 per cent.),		10,000 00
Balance for the year (deficit),		416 17
Balance at commencement of year,		123,619 24
Balance Sept. 30, 1888 (surplus),		123,203 07

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$367,701 26	
Stock of Monadnock Railroad Co. (54 shares),	3,090 00	
TOTAL PERMANENT INVESTMENTS,		$370,791 26
Cash,		5,811 81
TOTAL ASSETS,		$376,603 07
LIABILITIES.		
Capital stock,		$205,400 00
Funded debt,		48,000 00
Profit & Loss balance,		123,203 07
TOTAL LIABILITIES,		$376,603 07

DESCRIPTION OF ROAD.	
Main line of road from Winchendon, Mass., to Peterborough, N. H.,	15.800 miles.
Main line of road in Massachusetts,	2.038 "
Main line of road in New Hampshire,	13.762 "
Total road belonging to this company,	15.800 "
Sidings and other tracks not above enumerated,	.700 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	16.500 "
Same in Massachusetts,	2.038 "
Number of stations on all *roads owned* by this company,	5
Same in Massachusetts,	1

General Information.		
Number of miles of road owned by your company not furnished with telegraph facilities:		
From Winchendon, Mass., to Peterborough, N. H., . .		15.8 miles.
Bridges.		
Number of crossings of highways at grade,*		1
Number of crossings at which there are neither signals nor flagmen, ...		1
Capital Stock.		
Capital stock authorized by charter, . .	$350,000 00	
Capital stock authorized by votes of company,	250,000 00	
Capital stock issued (number of shares, 2,054); amount paid in, ...		$205,400 00
Total Amount paid in, as per Books of the Co., .		205,400 00
Total number of stockholders, ...	5	
Number of stockholders in Massachusetts, . . .	2	
Amount of stock held in Massachusetts, . .	$102,400 00	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due July 1, 1897, rate of interest 5 per cent., ...		$48,000 00
Interest paid on same during year, . . .	$2,356 67	

Name and Residence of Officers.

Henry K. French, *President*, Peterborough, N. H. Peter Upton, *Auditor*, East Jaffrey, N. H. John H. Cutler, *Treasurer and Clerk of Corporation*, Peterborough, N. H.

Name and Residence of Directors last Elected.

Henry K. French, Peterborough, N. H. Rodney Wallace, Fitchburg, Mass. Edward C. Thayer, Keene, N. H. John H. Fairbank, Winchendon, Mass. Peter Upton, East Jaffrey, N. H. Oscar H. Bradley, East Jaffrey, N. H. Elijah B. Phillips, Boston, Mass.

Proper Address of the Company.

MONADNOCK RAILROAD COMPANY,
Peterborough, N. H.

HENRY K. FRENCH,
President and Director.
JOHN H. CUTLER,
Treasurer.

State of New Hampshire.

Hillsborough, ss. Oct. 19, 1888. Then personally appeared Henry K. French and John H. Cutler above named, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

R. B. HATCH,
Justice of the Peace.

* In Massachusetts, on miles road owned.

REPORT

OF THE

LESSEES MONADNOCK RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$33,624 04
Total expense (including taxes),		27,778 88
Net income,		5,845 16
Rentals (for use of road),		12,000 00
Balance for the year (deficit),		6,154 84
ANALYSIS OF EARNINGS.		
From local passengers,		$4,826 27
through passengers (to and from other roads),		7,103 40
express and extra baggage,		1,000 00
mails,		708 84
Total earnings from passenger department,		13,638 51
From local freight,		7,608 43
through freight (to and from other roads),		11,676 54
Total earnings from freight department,		19,284 97
TOTAL TRANSPORTATION EARNINGS,		32,923 48
Income from all other sources, viz.:		700 56
Rents, etc.,	$700 56	
TOTAL INCOME FROM ALL SOURCES,		$33,624 04
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,200 00
Stationery and printing,		300 00
Outside agencies and advertising,		20 00
Repairs of bridges (including culverts and cattle-guards),		208 85
Repairs of buildings,		350 76
Repairs of fences, road-crossings and signs,		32 00
Renewal of ties,		3,867 29
[Number laid, 10,676.]		
Repairs of road-bed and track,		7,435 24
Repairs of locomotives,		914 27
Fuel for locomotives,		3,966 32
[Tons of coal, 844.]		
Water supply,		54 00
Oil and waste,		295 68
Locomotive service,		1,817 12
Repairs of passenger-cars,		635 53
Passenger-train service,		779 87
Passenger-train supplies,		22 58
Repairs of freight-cars,		67 24
Freight-train service,		1,250 62
Mileage freight-cars,		695 47
Telegraph expenses,		21 00
Agents and station service,		2,229 88
Station supplies,		85 86
TOTAL OPERATING EXPENSES,		$26,249 58
Taxes,		1,529 30
TOTAL OPERATING EXPENSES AND TAXES,		$27,778 88

Mileage, Traffic, etc.	
Passenger-train mileage,	17,987
Freight-train mileage,	8,993
Total Train Mileage,	26,980
Number of local passengers (including season),	16,423
Number of through passengers (to and from other roads),	13,428
Total Number of Passengers carried,	29,851
Local passenger mileage (local passengers carried one mile),	164,632
Through passenger mileage (through passengers carried one mile),	161,328
Total Passenger Mileage,	325,960
Number tons local freight,	6,391
Number tons through freight (to and from other roads),	28,630
Total Number Tons Freight carried,	35,021
Local freight mileage (tons local freight carried one mile),	77,324
Through freight mileage (tons through freight carried one mile),	431,885
Total Freight Mileage,	509,209
Average weight of passenger-trains (exclusive of passengers),	30 tons.
Average number of cars in passenger-trains,	2
Average number of persons employed,	25
Description of Road.	
Total miles of road operated by lessees,	15.80 miles.
Total miles of road operated by lessees in Massachusetts,	2.038 "
Rates of Fare, etc.	
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	4.00 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	0.44 "
Average rate of fare per mile *received* from *all* passengers,	3.66 "
Average rate of local freight per ton per mile,	8.00 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	2.72 "
Average rate of freight per ton per mile *received* from *all* freight,	3.78 "

WM. A. RUSSELL,
EDWARD C. THAYER,
G. W. RUSSELL,
WILLIAM H. HILL,
H. W. SUTER,
Cheshire Railroad Co., Lessees, Directors.

F. H. KINGSBURY,
Treasurer.

R. STEWART,
Superintendent.

Commonwealth of Massachusetts.

Suffolk, ss. Nov. 19, 1888. Then personally appeared Wm. A. Russell, E. C. Thayer, H. W. Suter, Wm. H. Hill, Geo. W. Russell, R. Stewart, F. H. Kingsbury, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

J. M. WHEATON,
Justice of the Peace.

REPORT

OF THE

NANTUCKET RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[A narrow-gauge road.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$7,063 97
Total expense (including taxes),		3,538 37
Net income,		3,525 60
Interest accrued during year:		494 00
On funded debt,	$494 00	
Balance for the year (surplus),		3,031 60
Balance at commencement of year,	$372 90	
Deduct: Reduction in property,	372 90	
Balance Sept. 30, 1888 (surplus),		3,031 60
ANALYSIS OF EARNINGS.		
From local passengers,		$6,348 65
From mails,		160 41
Total earnings from passenger department,		6,509 06
From local freight,		554 91
Total earnings from freight department,		554 91
TOTAL INCOME FROM ALL SOURCES,		$7,063 97
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$200 00
Legal expenses,		10 00
Insurance,		90 00
Stationery and printing,		28 69
Contingencies and miscellaneous,		123 14
Repairs of road-bed and track,		798 76
Repairs of locomotives,		166 30
Fuel for locomotives,		750 49
[Tons of coal, 115.]		
Water supply,		100 00
Oil and waste,		67 85
Locomotive service,		692 53
Repairs of passenger-cars,		25 30
Passenger-train service,		396 00
Passenger-train supplies,		9 29
Agents and station service,		56 00
Station supplies,		3 23
TOTAL OPERATING EXPENSES,		$3,517 58
Taxes,		20 79
TOTAL OPERATING EXPENSES AND TAXES,		$3,538 37

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.*		
Property sold (or reduced in valuation on the books) and credited property accounts during the year:		
Reduction on construction,	$69,836 25	
Total credits to property accounts,		$69,836 25
NET REDUCTION OF PROPERTY ACCOUNT FOR THE YEAR,		$69,836 25

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$87,068 42	
Cost of equipment,	14,413 18	
TOTAL PERMANENT INVESTMENTS,		$101,481 60
Cash,		2,550 00
TOTAL ASSETS,		$104,031 60
LIABILITIES.		
Capital stock,		$84,000 00
Funded debt,		17,000 00
Profit & Loss balance,		3,031 60
TOTAL LIABILITIES,		$104,031 60

MILEAGE, TRAFFIC, ETC.	
Passenger-train mileage,	11,176
TOTAL TRAIN MILEAGE,	11,176
Number of local passengers (including season),	20,638
TOTAL NUMBER OF PASSENGERS CARRIED,	20,638
Local passenger mileage (local passengers carried one mile),	227,018
TOTAL PASSENGER MILEAGE,	227,018
Number tons local freight,	280
TOTAL NUMBER TONS FREIGHT CARRIED,	280
Average number of cars in passenger-trains,	3
Average number of persons employed,	15
DESCRIPTION OF ROAD.	
Main line of road from Nantucket to Siasconset,	11.160 miles.
Main line of road in Massachusetts,	11.160 "
Total road belonging to this company,	11.160 "
Sidings and other tracks not above enumerated,	.080 "
Same in Massachusetts,	.080 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	11.240 "
Same in Massachusetts,	11.240 "
Total miles of road operated by this company,	11.160 "
Total miles of road operated by this company in Massachusetts,	11.160 "
Number of stations on all *roads owned* by this company,	3
Same in Massachusetts,	3
EQUIPMENT.	
Number of locomotives,	2
Number of passenger-cars,	4
Number of freight-cars (basis of 8 wheels),	3

* See letter on page 160.

Bridges.		
Number of crossings of highways at grade,		1
Number of crossings at which gates or flagmen are maintained,		1
Capital Stock.		
Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	84,000 00	
Capital stock issued (number of shares, 840); amount paid in,		$84,000 00
Total Amount paid in, as per Books of the Co.,		84,000 00
Total number of stockholders,	44	
Number of stockholders in Massachusetts,	38	
Amount of stock held in Massachusetts,	$73,300 00	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due various times, rate of interest 7 per cent.,		$17,000 00
Interest paid on same during year,	$494 00	

Name and Residence of Officers.

Jonathan Dorr, *President*, Boston, Mass. P. H. Folger, *Superintendent*, Boston, Mass. John H. Norton, *Treasurer and Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors last Elected.

Jonathan Dorr, Boston. John H. Norton, Boston. P. H. Folger, Boston. George A. Goddard, Boston. James W. Cartwright, Boston.

Proper Address of the Company.

NANTUCKET RAILROAD COMPANY,
31 Milk Street, Boston, Mass.

JONATHAN DORR,
JAMES W. CARTWRIGHT,
JOHN H. NORTON,
GEORGE A. GODDARD,
PHILIP H. FOLGER,
Directors.

JOHN H. NORTON,
Treasurer.

PHILIP H. FOLGER,
Superintendent.

Commonwealth of Massachusetts.

Suffolk, ss. Nov. 1, 1888. Then personally appeared Jonathan Dorr, James W. Cartwright, John H. Norton, George A. Goddard and Philip H. Folger, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

S. K. HAMILTON,
Justice of the Peace.

BOSTON, Sept. 30, 1888.

Railroad Commissioners of the State of Massachusetts.

GENTLEMEN: — The larger reduction in the property account of the Nantucket Railroad is due to the fact that the stockholders transferred all their rights and privileges to the trustees of the bondholders, and from them to the bondholders themselves, thus cancelling the old bonds and interest.

Upon completion of the above transfer, the company was reorganized by the bondholders, with a capital stock as per our report of this year.

NANTUCKET RAILROAD COMPANY.
By JOHN H. NORTON, *Treasurer.*

REPORT

OF THE

TRUSTEE FOR THE BONDHOLDERS OF THE NANTASKET BEACH RAILROAD,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Old Colony Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (coupons presented to Old Colony Railroad Company by bondholders, and paid to date),		$4,687 50
Net income,		4,687 50
Interest accrued during year:		4,687 50
On funded debt,	$4,687 50	
Balance Sheet Sept. 30, 1888.		
ASSETS.		
Cost of road,	$250,000 00	
TOTAL ASSETS,		$250,000 00
LIABILITIES.		
Funded debt,		250,000 00
TOTAL LIABILITIES,		$250,000 00
DESCRIPTION OF ROAD.		
Main line of road from Old Colony House to Pemberton, Hull,		6.933 miles.
Main line of road in Massachusetts,		6.933 "
Total road belonging to this company,		6.933 "
Sidings and other tracks not above enumerated,		2.535 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,		9.468 "
Same in Massachusetts,		9.468 "
BRIDGES.		
Number of timber bridges of 25 feet and upwards,		5
Number of crossings of highways at grade,		4
Number of crossings at which gates or flagmen are maintained,		2
Number of crossings at which there are neither signals nor flagmen,		2

ARTHUR W. MOORS,
Trustee.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 22, 1888. Then personally appeared the above-named Arthur W. Moors, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

JOHN L. CURTISS,
Justice of the Peace.

REPORT

OF THE

NASHUA, ACTON & BOSTON RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Concord Railroad of New Hampshire.]

GENERAL EXHIBIT FOR THE YEAR.		
Interest accrued during year:		$30,000 00
On funded debt,	$30,000 00	
Balance for the year (deficit),		30,000 00
Balance at commencement of year (deficit),		429,194 29
Balance Sept. 30, 1888 (deficit),		459,194 29

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$1,057,031 20
Debit balances,		6,257 41
Profit & Loss balance,		459,194 29
TOTAL ASSETS,		$1,522,482 90
LIABILITIES.		
Capital stock,		$500,000 00
Funded debt,		500,000 00
Unfunded debt, viz:		522,482 90
Interest unpaid,	$416,973 00	
Notes payable,	105,509 90	
TOTAL LIABILITIES,		$1,522,482 90

DESCRIPTION OF ROAD.	
Main line of road from Acton to Nashua, N. H.,	20.21 miles.
Main line of road in Massachusetts,	15.46 "
Main line of road in New Hampshire,	4.75 "
Total road belonging to this company,	20.21 "
Sidings and other tracks not above enumerated,	2.53 "
Same in Massachusetts,	.85 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	22.74 "
Same in Massachusetts,	16.31 "
Number of stations on all *roads owned* by this company,	6
Same in Massachusetts,	6

Bridges.	
Number of trestle bridges of 25 feet length and upwards,	2
Aggregate length of same for single track (112 feet).	
Number of crossings of highways at grade,	2
Number of crossings of highways over railroad,	3
Number of highway bridges 18 feet above track,	2
Number of crossings at which there are neither signals nor flagmen,	2
Number of railroad crossings over other railroads (specifying each):	1
Stony Brook Railroad at Westford.	
Capital Stock.	
Capital stock authorized by charter, $600,000 00	
Capital stock authorized by votes of company, 500,000 00	
Capital stock issued (number of shares, 4,981); amount paid in,	$498,100 00
Capital stock paid in on shares not issued (number of shares, 19),	1,900 00
Total Amount paid in, as per Books of the Co.,	500,000 00
Total number of stockholders, 184	
Number of stockholders in Massachusetts, 89	
Amount of stock held in Massachusetts, $83,100 00	
Debt.	
Funded debt, as follows: —	
First mortgage bonds due 1896, rate of interest 6 per cent.,	$500,000 00

Name and Residence of Officers.

John C. Moulton, *President*, Laconia, N. H. F. D. Cook, *Treasurer*, Nashua, N. H. H. M. Cairs, *Clerk of Corporation*, Concord, N. H.

Name and Residence of Directors last Elected.

John C. Moulton, Laconia, N. H. John H. Pearson, Concord, N. H. Benj. O. Kimball, Concord, N. H. E. P. Brown, Nashua, N. H. G. A. Wason, New Boston, N. H. E. H. Spalding, Wilton, N. H. Fred'k Smythe, Manchester, N. H. W. M. Parker, Manchester, N. H. Chas. Williams, Manchester, N. H. Dan'l R. Marshall, Nashua, N. H. Joseph L. Stevens, Manchester, N. H. Josiah M. Fletcher, Nashua, N. H. Joseph H. Wiggin, Manchester, N. H.

Proper Address of the Company.

NASHUA, ACTON & BOSTON RAILROAD COMPANY,
Nashua, N. H.

JOHN C. MOULTON,
E. P. BROWN,
GEO. A. WASON,
DANIEL R. MARSHALL,
Directors.

F. D. COOK,
Treasurer.

STATE OF NEW HAMPSHIRE.

HILLSBOROUGH, ss. Nov. 3, 1888. Then personally appeared E. P. Brown, G. A. Wason and Dan'l R. Marshall, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

F. D. COOK,
Notary Public.

STATE OF NEW HAMPSHIRE.

HILLSBOROUGH, ss. Oct. 31, 1888. Then personally appeared F. D. Cook, and made oath to the truth of the foregoing statement by him subscribed.

GEO. F. HAMMOND,
Justice of the Peace.

STATE OF NEW HAMPSHIRE.

BELKNAP, ss. Nov. 23, 1888. Then personally appeared John C. Moulton, and made oath to the truth of the foregoing statement, by him subscribed.

Before me,
JOHN W. ASHMAN,
Justice of the Peace.

REPORT

OF THE

NASHUA & LOWELL RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Maine Railroad.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$91,533 29
Total expense (taxes paid by Boston & Lowell Railroad),		2,326 45
Net income,		89,206 84
Interest accrued during year:		17,112 75
On funded debt,	$17,000 00	
On other debt,	112 75	
Dividends declared (9 per cent.),		72,000 00
Balance for the year (surplus),		94 09
Balance at commencement of year,		119,274 37
Balance Sept. 30, 1888 (surplus),		119,368 46
ANALYSIS OF EARNINGS.		
Rents for use of road,		$73,126 00
Income from all other sources, viz.:		18,407 29
Interest account,	$18,358 29	
Rebate on legal services,	49 00	
TOTAL INCOME FROM ALL SOURCES,		$91,533 29
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,955 00
Legal expenses,		325 00
Contingencies and miscellaneous,		46 45
TOTAL EXPENSES,		$2,326 45

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$691,292 07	
Cost of equipment,	218,242 95	
TOTAL PERMANENT INVESTMENTS,		$909,535 02
Cash,	$37,342 44	
Bills receivable,	300,000 00	
Sinking fund,	11,111 50	
TOTAL CASH ASSETS,		348,453 94
TOTAL ASSETS,		$1,257,988 96

Liabilities.		
Capital stock,		$800,000 00
Funded debt,		300,000 00
Unfunded debt, viz.:		38,620 50
Interest unpaid,	$723 00	
Dividends unpaid,	37,897 50	
Profit & Loss balance,		119,368 46
Total Liabilities,		$1,257,988 96

Description of Road.	
Main line of road from Nashua, N. H., to Lowell,	14.500 miles.
Main line of road in Massachusetts,	9.250 "
Main line of road in New Hampshire,	5.250 "
Double track on main line,	14.500 "
Same in Massachusetts,	9.250 "
Total road belonging to this company,	14.500 "
Sidings and other tracks not above enumerated,	6.084 "
Same in Massachusetts,	4.134 "
Total Length of Track, computed as Single Track,	35.084 "
Same in Massachusetts,	22.634 "
Total length of steel rails in tracks, not including steel-top rails,	35.084 "
Number of stations on all *roads owned* by this company,	5
Same in Massachusetts,	2
Bridges.	
Number of trestle bridges of 25 feet length and upwards,*	2
Aggregate length of same for single track (162 feet).	
Aggregate length of same for double track (81 feet).	
Number of spans of stone bridges of 25 feet and upwards,*	5
Aggregate length of same for single track (800 feet).	
Number of crossings of highways at grade,*	5
Number of crossings at which there are neither signals nor flagmen,*	5

Capital Stock.		
Capital stock authorized by charter,	$800,000 00	
Capital stock authorized by votes of company,	800,000 00	
Capital stock issued (number of shares, 8,000); amount paid in,		$800,000 00
Total Amount paid in, as per Books of the Co.,		800,000 00
Total number of stockholders,	502	
Number of stockholders in Massachusetts,	441	
Amount of stock held in Massachusetts,	$472,800 00	
Debt.		
Funded debt as follows: —		
Gold bonds due Aug. 1, 1893, rate of interest 6 per cent.,		$200,000 00
Interest paid on same during year,	$12,000 00	
Five per cent. bonds due July 1, 1900, rate of interest 5 per cent.,		100,000 00
Interest paid on same during year,	$5,000 00	

Name and Residence of Officers.

Francis A. Brooks, *President*, Boston, Mass. J. W. White, *Treasurer*, Nashua, N. H. Walter A. Lovering, *Clerk of Corporation*, Nashua, N. H.

* In Massachusetts, on miles road owned.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Francis A. Brooks, Boston, Mass. Gidney K. Richardson, Boston, Mass. Jeremiah W. White, Nashua, N. H. Wm. W. Bailey, Nashua, N. H. A. M. Shaw, Lebanon, N. H.

PROPER ADDRESS OF THE COMPANY.

NASHUA & LOWELL RAILROAD CORPORATION,
NASHUA, N. H.

GEORGE C. LORD,
AMOS PAUL,
WM. S. STEVENS,
RICHARD OLNEY,
FRANK JONES,
SAMUEL C. LAWRENCE,
J. S. RICKER,
Directors of the Boston & Maine Railroad.
J. W. WHITE,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 28, 1888. Then personally appeared George C. Lord, Amos Paul, William S. Stevens, Richard Olney, Frank Jones, Samuel C. Lawrence and J. S. Ricker, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHAUNCEY P. JUDD,
Justice of the Peace.

STATE OF NEW HAMPSHIRE.

HILLSBOROUGH, ss. Nov. 5, 1888. Then personally appeared J. W. White, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

JOSEPH L. CLOUGH,
Justice of the Peace.

REPORT

OF THE

NEWBURYPORT RAILROAD,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Maine Railroad. Its operations are included in the report of that road, its business being so intimately connected that separate accounts have not been kept.]

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$597,386 33
TOTAL ASSETS,		$597,386 33
LIABILITIES.		
Capital stock,		$220,340 02
Funded debt,		300,000 00
Unfunded debt, viz.:		77,046 31
Vouchers and accounts,	$77,046 31	
TOTAL LIABILITIES,		$597,386 33

DESCRIPTION OF ROAD.	
Main line of road from Bradford to Newburyport, and from Georgetown to Danvers,	26.979 miles.
Main line of road in Massachusetts,	26.979 "
Total road belonging to this company,	26.979 "
Sidings and other tracks not above enumerated,	3.132 "
Same in Massachusetts,	3.132 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	30.111 "
Same in Massachusetts,	30.111 "
Total length of steel rails in tracks, not including steel-top rails,	25.520 "
[Weights per yard, 60 pounds.]	
Number of stations on all *roads owned* by this company,	9
Same in Massachusetts,	9
BRIDGES.	
Number of spans of timber bridges of 25 feet and upwards,	3
Aggregate length of same for single track (104 feet).	
Number of crossings of highways at grade,	28
Number of crossings of highways over railroad,	1
Number of crossings of highways under railroad,	1
Number of highway bridges less than 18 feet above track,	1
Height of lowest bridge above the rail,	14 ft. 6 in.
Number of crossings at which gates or flagmen are maintained,	12
Number of crossings at which there are neither signals nor flagmen,	16

CAPITAL STOCK.		
Capital stock authorized by charter, . .	$430,000 00	
Capital stock authorized by votes of company,	202,100 00	
Capital stock issued (number of shares, 2,021); amount paid in, ...		$202,100 00
Capital stock paid in on shares not issued, ...		18,240 02
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO., .		$220,340 02
DEBT.		
Funded debt, as follows: —		
Bonds, ...		$300,000 00

NAME AND RESIDENCE OF OFFICERS.

George C. Lord, *President*, Newton, Mass. Jas. T. Furber, *General Manager*, Lawrence, Mass. Wm. J. Hobbs, *Auditor*, Malden, Mass. Wm. Merritt, *Superintendent*, Boston, Mass. W. J. C. Kenney, *General Freight Agent*, Danvers, Mass. D. J. Flanders, *General Passenger Agent*, Malden, Mass. Amos Blanchard, *Treasurer*, Andover, Mass. Chauncey P. Judd, *Clerk of Corporation*, Reading, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

George C. Lord, Newton, Mass. Amos Paul, So. Newmarket, N. H. Nath'l J. Bradlee, Boston, Mass. Wm. S. Stevens, Dover, N. H. Jas. R. Nichols,* Haverhill, Mass. Jos. S. Ricker, Deering, Me. Sam'l C. Lawrence, Medford, Mass.

PROPER ADDRESS OF THE COMPANY.

NEWBURYPORT RAILROAD,
BOSTON, MASS.

GEORGE C. LORD,
NATH'L J. BRADLEE,
AMOS PAUL,
RICHARD OLNEY,
SAMUEL C. LAWRENCE,
Directors.
AMOS BLANCHARD,
Treasurer.
JAS. T. FURBER,
General Manager.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 1, 1888. Then personally appeared George C. Lord, Nathaniel J. Bradlee, Amos Paul, Richard Olney, Samuel C. Lawrence, Amos Blanchard and James T. Furber, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

C. P. JUDD,
Justice of the Peace.

* Deceased.

REPORT

OF THE

NEWBURYPORT CITY RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to the Eastern Railroad Company, and is operated by the Boston & Maine Railroad.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$6,906 99
Total expense (including taxes),		1,080 74
Net income,		5,826 25
Interest accrued during year:		1,750 00
On funded debt,	$1,750 00	
Dividends declared (3¼ per cent.),		3,152 50
Balance for the year (surplus),		923 75
Balance at commencement of year,		17,477 96
Balance Sept. 30, 1888 (surplus),		18,401 71
ANALYSIS OF EARNINGS.		
Rents for use of road,		$6,000 00
Income from all other sources, viz.:		906 99
Rent of land,	$8 00	
Interest accrued on sinking fund,	898 99	
TOTAL INCOME FROM ALL SOURCES,		$6,906 99
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$200 00
Contingencies and miscellaneous,		4 25
TOTAL EXPENSES,		$204 25
Taxes,		876 49
TOTAL EXPENSES AND TAXES,		$1,080 74

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$122,128 33
Cash,	$895 08	
Sinking fund,	17,378 30	
TOTAL CASH ASSETS,		18,273 38
TOTAL ASSETS,		$140,401 71
LIABILITIES.		
Capital stock,		$97,000 00
Funded debt,		25,000 00
Profit & Loss balance,		18,401 71
TOTAL LIABILITIES,		$140,401 71

Description of Road.		
Main line of road from Boston & Maine Railroad crossing to City Wharf,		2.08 miles.
Main line of road in Massachusetts,		2.08 "
Double track on main line,		0.15 "
Same in Massachusetts,		0.15 "
Total road belonging to this company,		2.08 "
Sidings and other tracks not above enumerated,		1.80 "
Same in Massachusetts,		1.80 "
Total Length of Track, computed as Single Track,		4.03 "
Same in Massachusetts,		4.03 "
Number of stations on all *roads owned* by this company,		1
Same in Massachusetts,		1
Bridges.		
Number of crossings of highways at grade,		4
Number of crossings of highways over railroad,		3
Number of highway bridges 18 feet above track.		3
Number of crossings at which gates or flagmen are maintained,		2
Number of crossings at which there are neither signals nor flagmen,		2
Capital Stock.		
Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock issued (number of shares, 970); amount paid in,		$97,000 00
Total Amount paid in, as per Books of the Co.,		97,000 00
Total number of stockholders,	30	
Number of stockholders in Massachusetts,	27	
Amount of stock held in Massachusetts,	$95,300 00	
Debt.		
Funded debt, as follows: —		
Bonds due 1892, rate of interest 7 per cent.,		$25,000 00
Interest paid on same during year,	$1,750 00	

Name and Residence of Officers.

Albert Currier, *President*, Newburyport, Mass. Albert W. Greenleaf, *Treasurer and Clerk of Corporation*, Newburyport, Mass.

Name and Residence of Directors last Elected.

Albert C. Titcomb, mayor, Newburyport, Mass. Albert Currier, Newburyport, Mass. Moses H. Fowler, Newburyport, Mass. Philip H. Blumpey, Newburyport, Mass. Henry M. Cross, Newburyport, Mass. Henry B. Little, Newburyport, Mass. Hale Knight, Newbury, Mass.

Proper Address of the Company.

NEWBURYPORT CITY RAILROAD COMPANY,

Office at Merchants' National Bank, Newburyport, Mass.

ALBERT CURRIER,
PHILIP H. BLUMPEY,
ALBERT C. TITCOMB, Mayor,
M. H. FOWLER,
HALE KNIGHT,
Directors.

ALBERT W. GREENLEAF,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Oct. 12, 1888. Then personally appeared Albert Currier, Philip H. Blumpey, Albert C. Titcomb, mayor, M. H. Fowler and Hale Knight, a majority of the board of directors, and Albert W. Greenleaf, treasurer, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

GEORGE H. STEVENS,
Justice of the Peace.

REPORT

OF THE

NEW HAVEN & NORTHAMPTON COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the New York, New Haven & Hartford Railroad Co.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rents for use of road),		$337,252 62
Total expense (including taxes),		27,674 53
Net income,		309,578 09
Rentals:		26,848 82
Holyoke & Westfield Railroad, viz.: —		
Interest on bonds,	$17,600 00	
One-half excess earnings,	9,248 82	
Interest accrued during year:		243,125 00
On funded debt,	$233,000 00	
On other debt (sinking fund dues),	10,125 00	
Dividends declared (1 per cent.), 2 of ½ per cent.,		24,600 00
Balance for the year (surplus),		15,004 27
Balance at commencement of year,	$286,212 15	
Add: —		
Amount received on transfer account,	332 19	
Amount received for error on Fitchburg account,	200 00	
Bills payable, assumed by N. Y., N. H. & H. R. R.,	75,000 00	
Balance of account due N. Y., N. H. & H. R. R.,	34,881 90	
	$396,626 24	
Deduct: —		
Account of Zoar accident,	26,933 50	
Balance at commencement of year as so changed,		369,692 74
Balance Sept. 30, 1888 (surplus),		384,697 01
ANALYSIS OF EXPENSES.		
Contingencies and miscellaneous,		$520 73
TOTAL EXPENSES,		$520 73
Taxes,		27,153 80
TOTAL EXPENSES AND TAXES,		$27,674 53

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$5,650,038 40	
Cost of equipment,	911,781 53	
Lands in New Haven,	19,372 81	
Stock of Holyoke & Westfield Railroad,	20,000 00	
Stock of Southington Water Company,	1,000 00	
TOTAL PERMANENT INVESTMENTS,		$6,602,192 74

Cash,	$4 27	
Sinking fund,	142,500 00	
TOTAL CASH ASSETS,		$142,504 27
TOTAL ASSETS,		$6,744,697 01
LIABILITIES.		
Capital stock,		$2,460,000 00
Funded debt,		3,900,000 00
Profit & Loss balance,		384,697 01
TOTAL LIABILITIES,		$6,744,697 01
Present or Contingent Liabilities not included in the Balance Sheet.		
Bonds guaranteed by this company or a lien on its road, viz.:		$260,000 00
Holyoke & Westfield, 7 per cent. bonds,	$200,000 00	
Holyoke & Westfield, 6 per cent. bonds,	60,000 00	

DESCRIPTION OF ROAD.	
Main line of road from New Haven, Conn., to Conway Junction,	94.64 miles.
Main line of road in Massachusetts,	43.38 "
Main line of road in Connecticut,	51.26 "
Branches owned by company, viz.:	
Farmington to New Hartford, Conn. (single track),	14.09 "
Simsbury to Tariffville, Conn. (single track),	1.04 "
Northampton to Williamsburg, Mass. (single track),	7.51 "
South Deerfield to Turner's Falls, Mass. (single track),	10.07 "
Total length of branches owned by company,	32.71 "
Total length of branches owned by company in Massachusetts,	17.58 "
Total length of branches owned by company in Connecticut,	15.13 "
Total road belonging to this company,	127.35 "
Sidings and other tracks not above enumerated,	32 20 "
Same in Massachusetts,	18.30 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	159.55 "
Same in Massachusetts,	79.26 "
Total length of steel rails in tracks, not including steel-top rails,	131.42 "
Number of stations on all *roads owned* by this company,	28
Same in Massachusetts,	13
BRIDGES.	
Number of spans of iron bridges of 25 feet and upwards,*	51
Aggregate length of same for single track (3,001 feet).	
Number of spans of timber bridges of 25 feet and upwards,*.	1
Aggregate length of same for single track (118 feet).	
Number of crossings of highways at grade,*	50
Number of crossings of highways over railroad,	19
Number of crossings of highways under railroad,	21
Number of highway bridges 18 feet above track,	15
Number of highway bridges less than 18 feet above track,	4
Height of lowest bridge above the rail,	13 ft. 10¼ in.
Number of crossings at which gates or flagmen are maintained,	5
Number of crossings at which electric signals are maintained,*	1
Number of crossings at which there are neither signals nor flagmen,*	44
Number of railroad crossings at grade (specifying each),*	1
Boston & Albany at Westfield.	

* In Massachusetts, on miles road owned.

CAPITAL STOCK.		
Capital stock authorized by charter, . .	$5,000,000 00	
Capital stock authorized by votes of company,	2,600,000 00	
Capital stock issued (number of shares, 24,600); amount paid in, ...		$2,460,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO., .		2,460,000 00
Total number of stockholders, ...	233	
Number of stockholders in Massachusetts, . . .	39	
Amount of stock held in Massachusetts, . .	$120,400 00	
DEBT.		
Funded debt, as follows: —		
First mortgage bonds due 1899, rate of interest 7 per cent.,		$1,300,000 00
Interest paid on same during year, . .	$91,000 00	
Cons. M. & S. F. bonds due 1909, rate of interest 6 per cent., ...		1,200,000 00
Interest paid on same during year. . .	$72,000 00	
Northern extension mortgage bonds due 1911, rate of interest 5 per cent., ...		700,000 00
Interest paid on same during year, . .	$35,000 00	
Convertible bonds due 1896, rate of interest 5 per cent., .		700,000 00
Interest paid on same during year, . .	$35,000 00	
TOTAL AMOUNT OF FUNDED DEBT, ...		$3,900,000 00

NAME AND RESIDENCE OF OFFICERS.

Charles N. Yeamans, *President and Superintendent*, Westfield, Mass. Edward A. Ray, *Treasurer and Clerk of Corporation*, New Haven, Conn.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles N. Yeamans, Westfield, Mass. George J. Brush, New Haven, Conn. Daniel Trowbridge, New Haven, Conn. Horatio G. Knight, Easthampton, Mass. George H. Watrous, New Haven, Conn. Charles M. Pond, Hartford, Conn. E. H. Trowbridge, New Haven, Conn. Edward M. Reed, New Haven, Conn. Charles P. Clark, New Haven, Conn.

PROPER ADDRESS OF THE COMPANY.

THE NEW HAVEN & NORTHAMPTON COMPANY,
UNION PASSENGER STATION,
NEW HAVEN, CONN.

CHAS. N. YEAMANS,
DANIEL TROWBRIDGE,
GEO. J. BRUSH,
EDWARD M. REED,
GEO. H. WATROUS,
E. H. TROWBRIDGE,
Directors.

EDWARD A. RAY,
Treasurer.

STATE OF CONNECTICUT.

COUNTY OF NEW HAVEN, ss. Nov. 15, 1888. Then personally appeared Chas. N. Yeamans, Daniel Trowbridge, Geo. J. Brush, Edward M. Reed, Geo. H. Watrous and E. H. Trowbridge, directors, and Edward A. Ray, treasurer, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

A. S. MAY,
Notary Public.

REPORT

OF THE

NEW LONDON NORTHERN RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by J. Gregory Smith and others.]

GENERAL EXHIBIT FOR THE YEAR.
(*Company's Account*)

Rents received from lessees, and other rents,			$207,152 27
Interest,			33,706 70
Total income,			240,858 97
General expenses,			6,761 09
Repairs: Wharf, etc., at New London,			1,732 86
Interest accrued during year:			86,383 83
On funded debt,	$79,725 00		
On other debt,	6,658 83		
Dividends declared (7 per cent.),			105,000 00
Balance for the year (surplus),			40,981 19
Balance at commencement of year,	$485,419 01		
Deduct: —			
Gill crossing,	$3,134 46		
Change of grade, Miller's Falls,	24,473 83		
Damage by freshets,	1,319 80		
New steel rails, less old iron sold,	47,082 48		
		76,010 57	
Balance at commencement of year as so changed,			409,408 44
Balance Sept. 30, 1888 (surplus),			450,389 63

ANALYSIS OF EARNINGS.
(*Lessee's Account.*)

From local passengers,		$130,249 50
through passengers (to and from other roads),		82,341 22
express and extra baggage,		10,298 79
mails,		11,030 00
Total earnings from passenger department,		233,919 51
From local freight,		141,794 48
through freight (to and from other roads),		237,544 51
Total earnings from freight department,		379,338 99
TOTAL TRANSPORTATION EARNINGS,		613,258 50
Income from all other sources, viz.:		13,133 07
Rent of tenements, buildings, etc.,	$13,133 07	
TOTAL INCOME FROM ALL SOURCES,		$626,391 57

ANALYSIS OF EXPENSES.		
(*Lessee's Account.*)		
Salaries of general officers and clerks,		$5,567 53
Legal expenses,		150 00
Insurance,		2,232 54
Stationery and printing,		3,962 81
Outside agencies and advertising,		962 59
Contingencies and miscellaneous,		5,869 27
Repairs of bridges (including culverts and cattle-guards),		19,019 06
Repairs of buildings,		5,028 85
Repairs of fences, road-crossings and signs,		3,043 77
Renewal of ties,		15,843 95
[Number laid, 48,444.]		
Repairs of road-bed and track,		50,817 03
Repairs of locomotives,		30,915 21
Fuel for locomotives,		67,313 21
[Tons of coal, 17,412; cords of wood, 1,262.]		
Water supply,		2,031 36
Oil and waste,		5,588 32
Locomotive service,		29,927 75
Repairs of passenger-cars,		15,987 98
Passenger-train service,		11,793 51
Passenger-train supplies,		300 84
Repairs of freight-cars,		20,550 03
Freight-train service,		16,202 06
Freight-train supplies,		513 97
Mileage freight-cars,		21,695 82
Telegraph expenses,		2,232 18
Loss and damage, freight and baggage,		451 07
Loss and damage, property and cattle,		891 90
Personal injuries,		165 00
Agents and station service,		68,965 44
Station supplies,		6,313 50
TOTAL OPERATING EXPENSES,		$414,336 55
Taxes,		17,997 32
TOTAL OPERATING EXPENSES AND TAXES,		$432,333 87
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Land, land damages, and fences,		$1,600 00
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		$1,600 00

Balance Sheet Sept. 30, 1888.

(*Company's Account.*)

ASSETS.

Cost of road,	$2,820,799 28	
Cost of equipment,	248,420 44	
Bonds of Brattleborough & Whitehall R. R.,	150,000 00	
Steamboat property,	93,170 00	
TOTAL PERMANENT INVESTMENTS,		$3,312,389 72
Cash,	$23,791 77	
Debit balances,	250,982 73	
TOTAL CASH ASSETS,		274,774 50
TOTAL ASSETS,		$3,587,164 22

Liabilities.		
Capital stock,		$1,500,000 00
Funded debt,		1,499,500 00
Unfunded debt, viz.:		137,274 59
Interest unpaid,	$856 84	
Dividends unpaid,	1,417 75	
Notes payable,	135,000 00	
Profit & Loss balance,		450,389 63
Total Liabilities,		$3,587,164 22

Mileage, Traffic, etc. (*Lessee's Account.*)	
Passenger-train mileage,	266,080
Freight-train mileage,	206,924
Total Revenue-Train Mileage,	473,004
Switching-train mileage,	124,414
Other train mileage,	1,105
Total Train Mileage,	598,523
Number of season-ticket passengers,	27,787
Number of local passengers (including season),	381,994
Number of through passengers (to and from other roads),	153,130
Total Number of Passengers carried,	535,124
Local passenger mileage (local passengers carried one mile),	4,602,529
Through passenger mileage (through passengers carried one mile),	3,269,417
Total Passenger Mileage,	7,871,946
Number tons local freight,	146,055
Number tons through freight (to and from other roads),	389,086
Total Number Tons Freight carried,	535,141
Local freight mileage (tons local freight carried one mile),	4,927,488
Through freight mileage (tons through freight carried one mile),	24,107,044
Total Freight Mileage,	29,034,532
Average weight of passenger-trains (exclusive of passengers),	246 tons.
Average number of cars in passenger-trains,	4
Average weight of freight-trains (exclusive of freight),	225 tons.
Average number of cars in freight-train,	25
Average number of persons employed,	546

Description of Road.	
Main line of road from New London to Brattleborough,	121.00 miles.
Main line of road in Massachusetts,	54.00 "
Main line of road in Vermont,	11.00 "
Main line of road in Connecticut,	56.00 "
Total road belonging to this company,	121.00 "
Sidings and other tracks not above enumerated,	27.32 "
Same in Massachusetts,	10.08 "
Total Length of Track, computed as Single Track,	148.32 "
Same in Massachusetts,	64.08 "
Total length of steel rails in tracks, not including steel-top rails,	106.00 "
[Weights per yard, 57, 58 and 60 pounds.]	
Total miles of road operated by lessees,	100.00 "
Total miles of road operated by lessees in Massachusetts,	54.00 "
Number of stations in Massachusetts on all *roads operated* by lessees,	19.00 "
Number of telegraph offices in same,	10.00 "
Number of stations on all *roads owned* by this company,	45.00 "
Same in Massachusetts,	19.00 "

Equipment.	
Number of locomotives,	26
Number of passenger-cars,	17
Number of baggage, mail and express cars,	13
Number of freight-cars (basis of 8 wheels),	325
Number of other cars,	7

List of Accidents.

	From causes beyond their own control (in Massachusetts).		From their own misconduct or carelessness (in Massachusetts).		Total in Massachusetts.		Total on whole road operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	-	-	-	-	-
Employees,	-	-	2	2	2	2	3	4
Others,	-	-	1	-	1	-	-	3

Statement of each Accident in Massachusetts.

Oct. 20, 1887. — M. Connor, brakeman, struck by bridge near Dwight's, and instantly killed.

March 17, 1888. — M. Murphy, flagman at Amherst, struck by moving freight-train, receiving injuries resulting in loss of left forearm.

June 16. — Body of man named Michael Breen was discovered on track in yard at Palmer; supposed to have been run over by locomotive backing through the yard. Man had apparently been intoxicated, and asleep on the track.

September 17. — George Potter, brakeman on train 29, fell off train near Belchertown, and was killed.

September 19. — E. Costello, brakeman, attempting to board moving train at Miller's Falls, fell under the cars, and had foot badly crushed so as to require amputation.

General Information.	
Maximum weight of locomotives in working order,	71 tons.
Average weight of locomotives in working order,	37 "
Maximum weight of tenders full of fuel and water,	27 "
Average weight of tenders full of fuel and water,	21 "
Maximum weight of passenger-cars,	30 "
Average weight of passenger-cars,	22 "
Average weight of mail and baggage cars,	17 "
Average weight of 8-wheel box freight-cars,	9 "
Average weight of 8-wheel platform-cars,	8 "
Average weight of 4-wheel platform-cars,	4½ "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	43 ft. 4 in.
Total length of heaviest engine and tender over all,	53 ft. 3 in.
What telegraph companies own a line on your right of way, and how many miles does each own? Western Union — 121 miles.	

BRIDGES BUILT WITHIN THE YEAR IN MASSACHUSETTS.

LOCATION.	KIND.	MATERIAL.	LENGTH.	WHEN BUILT.
Palmer, ...	Riveted Lattice.	Iron.	140 feet.	–

BRIDGES.	
Number of spans of iron bridges of 25 feet and upwards,* .	1
Aggregate length of same for single track (140 feet).	
Number of spans of timber bridges of 25 feet and upwards,*	30
Aggregate length of same for single track (3,727 feet).	
Number of crossings of highways at grade,*	39
Number of crossings of highways over railroad, . . .	6
Number of crossings of highways under railroad, . . .	15
Number of highway bridges 18 feet above track, . . .	3
Number of highway bridges less than 18 feet above track, .	3
Height of lowest bridge above the rail, ...	17 ft. 6 in.
Number of crossings at which gates or flagmen are maintained,	1
Number of crossings at which there are neither signals nor flagmen,*	38
Number of railroad-crossings at grade (specifying each) : * .	2
Boston & Albany at Palmer and Barrett's Junction.	
Number of railroad-crossings over other railroads (specifying each) : *	1
Fitchburg at Miller's Falls.	
Number of railroad-crossings under other railroads (specifying each) : *	1
Central Massachusetts near Belchertown.	
RATES OF FARE, ETC.	
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	3.10 cents.
Average rate of fare per mile *received* from passengers to and from other roads, ...	2.52 "
Average rate of fare per mile for season-ticket passengers, .	.72 "
Average rate of fare per mile *received* from *all* passengers, .	2.70 "
Average rate of local freight per ton per mile, . . .	3.50 "
Average rate of freight per ton per mile *received* from freight to and from other roads, ...	.98 "
Average rate of freight per ton per mile *received* from *all* freight, ...	1.31 "
CAPITAL STOCK.	
Capital stock authorized by charter, . . $2,000,000 00	
Capital stock authorized by votes of company, 1,500,000 00	
Capital stock issued (number of shares, 15,000); amount paid in, ...	$1,500,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO., .	1,500,000 00
Total number of stockholders, ... 336	
Number of stockholders in Massachusetts, . . . 56	
Amount of stock held in Massachusetts, . . $327,000 00	
DEBT.	
Funded debt, as follows : —	
Second mortgage bonds due 1892, rate of interest 7 per cent., ...	$387,500 00
Interest paid on same during year, . . $27,125 00	
Consolidated bonds due 1910, rate of interest 5 per cent.,	812,000 00
Interest paid on same during year, . . $40,600 00	
Consolidated bonds due 1910, rate of interest 4 per cent., .	300,000 00
Interest paid on same during year, . . $12,000 00	
TOTAL AMOUNT OF FUNDED DEBT, ...	$1,499,500 00

* In Massachusetts, on miles road owned.

NAME AND RESIDENCE OF OFFICERS.

Robert Coit, *President and Treasurer*, New London, Conn. J. W. Hobart, *General Manager*, St. Albans, Vt. E. G. Lucas, *Auditor*, St. Albans, Vt. C. F. Spaulding, *Superintendent and General Freight Agent*, New London, Conn. S. W. Cummings, *General Passenger Agent*, St. Albans, Vt. J. A. Southard, *Clerk of Corporation*, New London, Conn.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Robert Coit, New London, Conn. Benjamin Stark, New London, Conn. Augustus Brandegee, New London, Conn. Jonathan N. Harris, New London, Conn. C. A. Williams, New London, Conn. Thomas Ramsdell, Windham, Conn. C. H. Osgood, Norwich, Conn. James A. Rumrill, Springfield, Mass.

PROPER ADDRESS OF THE COMPANY.

NEW LONDON NORTHERN RAILROAD COMPANY,
NEW LONDON, CONN.

ROB'T COIT,
AUG. BRANDEGEE,
Directors.
ROB'T COIT,
Treasurer.
C. F. SPAULDING,
Superintendent.

STATE OF CONNECTICUT.

NEW LONDON, ss. Nov. 5, 1888. Then personally appeared Robert Coit, Augustus Brandegee and C. F. Spaulding, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JUSTUS A. SOUTHARD,
Notary Public.

REPORT

OF THE

NEW YORK & BOSTON INLAND RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This company was organized and obtained certificate of incorporation, dated Jan. 17, 1883, and has also filed with the Secretary of State certificate, dated Jan. 14, 1885, that the law had been complied with.]

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$157,835 82
Cash,		43 30
TOTAL ASSETS,		$157,879 12
LIABILITIES.		
Capital stock,		$52,500 00
Capital stock, first assessment,		43,730 00
Capital stock, second assessment,		43,730 00
Unfunded debt, viz.:		17,919 12
Notes payable,	$17,200 00	
Vouchers and accounts,	719 12	
TOTAL LIABILITIES,		$157,879 12

CAPITAL STOCK.		
Capital stock authorized by charter,	$500,000 00	
Capital stock authorized by votes of company,	500,000 00	
Capital stock issued (number of shares, 525); amount paid in,		$52,500 00
Capital stock paid in on shares not issued (number of shares, 4,475),		87,460 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		139,960 00
Total number of stockholders,	38	
Number of stockholders in Massachusetts,	29	
Amount of stock held in Massachusetts,	$78,590 00	

NAME AND RESIDENCE OF OFFICERS.

George Cook, *President*, West Newton, Mass. George C. Hill, *Treasurer*, Boston, Mass. Edward D. Hewins, *Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

George Cook, West Newton, Mass. H. A. Blood, Fitchburg, Mass. J. H. Buttrick, Lowell, Mass. Wm. Rotch, Boston, Mass. Chas. R. Burleigh, Fitchburg, Mass. George C. Hill, Boston, Mass. Morgan Rotch, New Bedford, Mass. Henry R. Parrott, Bridgeport, Ct. Wm. M. Thayer, Boston, Mass. Sam'l L. Ham, Peabody, Mass. Chas. H. Blood, Fitchburg, Mass. David K. Stevens, Boston, Mass. E. D. Hewins, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

NEW YORK & BOSTON INLAND RAILROAD COMPANY,

8 CONGRESS ST., ROOM 22, BOSTON, MASS.

GEO. COOK,
D. K. STEVENS,
WM. M. THAYER,
H. A. BLOOD,
CHAS. H. BLOOD,
WM. ROTCH,
Directors.
GEORGE C. HILL,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, SS. Nov. 1, 1888. Then personally appeared Geo. Cook, D. K. Stevens, Wm. M. Thayer, H. A. Blood, Chas. H. Blood, Wm. Rotch and George C. Hill, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

E. D. HEWINS,
Justice of the Peace.

REPORT

OF THE

NEW YORK & NEW ENGLAND RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.

Total income,		$5,273,451 01
Total expense (including taxes),		3,699,249 58
Net income,		1,574,201 43
Rentals:		404,096 71
Newburgh, Dutchess & Connecticut R. R. Co.,	$47,246 69	
Rhode Island & Massachusetts R. R Co.,	20,000 00	
Boston & Albany R. R. Co.,	5,000 00	
Rockville R. R. Co.,	4,400 00	
Norwich & Worcester R. R. Co.,	327,450 02	
Interest accrued during year:		999,238 07
On funded debt,	$919,030 18	
On other debt,	80,207 89	
Dividends declared (7 per cent.),*		139,416 67
Balance for the year (surplus),		31,449 98
Balance at commencement of year (deficit),	$512,002 18	
Add: —		
Bad accounts charged off,	†2,811 52	
Expenditures during the fiscal year for rentals, renewals of roadway, equipment, etc., pertaining to the business of former years,	†83,191 29	
Discrepancy in accounts of Norwich & Worcester lease, caused by settlements in prior years,	†18,944 37	
Deduct: —		
Premium on sale preferred stock,	33,290 42	
Difference between the cost of New England transfer capital stock, as shown by the books of this company, and the amount realized from sale of same,	4,353 75	
Premium on sale second mortgage bonds, credit balances transferred, representing income of former years held in abeyance, now regarded as finally settled,	6,260 00	
Balance at commencement of year as so changed (deficit),		573,045 19
Balance Sept. 30, 1888 (deficit),		541,595 21

ANALYSIS OF EARNINGS.

From local passengers,		$1,293,601 52
through passengers (to and from other roads),		462,937 41
express and extra baggage,		144,689 68
mails,		53,523 04
Total earnings from passenger department,		1,954,751 65
From local freight,		1,126,129 86
through freight (to and from other roads),		2,011,715 26
Total earnings from freight department,		3,137,845 12
TOTAL TRANSPORTATION EARNINGS,		5,092,596 77
Income from all other sources, viz.:		180,854 24
Rents,	$41,123 16	
Wharves and docks,	54,630 64	

* On preferred stock. † See note and correspondence on pages 195–197.

Miscellaneous switching,	$57,339 08	
Miscellaneous,	22,718 19	
Boston Harbor transfer,	5,043 17	
TOTAL INCOME FROM ALL SOURCES,		$5,273,451 01
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$148,743 05
Legal expenses,		21,722 71
Insurance,		9,501 79
Stationery and printing,		36,504 62
Outside agencies and advertising,		24,252 72
Contingencies and miscellaneous,		128,336 10
Repairs of bridges (including culverts and cattle-guards),		91,374 96
Repairs of buildings,		62,680 53
Repairs of fences, road-crossings and signs,		19,055 65
Renewal of rails,		34,429 47
[Number tons steel laid, $4{,}031\frac{1505}{2240}$.]		
Renewal of ties,		113,151 46
[Number laid, 249,194.]		
Repairs of road-bed and track,		351,957 88
Repairs of locomotives,		245,951 60
Fuel for locomotives,		469,250 52
[Tons of coal, 144,563.]		
Water supply,		25,587 32
Oil and waste,		22,685 79
Locomotive service,		319,634 24
Repairs of passenger-cars,		78,421 26
Passenger-train service,		138,481 79
Passenger-train supplies,		17,716 62
Mileage passenger-cars,		3,239 29
Repairs of freight-cars,		219,289 82
Freight-train service,		196,640 37
Freight-train supplies,		20,850 97
Mileage freight-cars,		39,903 13
Telegraph expenses,		50,457 83
Loss and damage, freight and baggage,		9,625 83
Loss and damage, property and cattle,		5,569 41
Personal injuries,		20,633 59
Agents and station service,		550,555 09
Station supplies,		44,386 61
TOTAL OPERATING EXPENSES,		$3,520,592 02
Taxes,		178,657 56
TOTAL OPERATING EXPENSES AND TAXES,		$3,699,249 58
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Grading and masonry,		$67,865 59
Bridging,		80,120 12
Superstructure, including rails,		37,767 18
Land, land damages, and fences,		47,421 77
Passenger and freight stations, wood-sheds, and water-stations,		19,642 54
Engine-houses, car-sheds, and turn-tables,		18,786 07
Machine-shops,		70,318 93
Engineering, agencies, salaries, and other expenses during construction,		5,719 15
Underlying liens bought,		740 00
TOTAL FOR CONSTRUCTION,		$348,381 35

Locomotives,		$13,380 30
Passenger, mail and baggage cars (number, 2),		85,257 07
Freight and other cars (number, 182),		87,959 71
Snow-plough,		450 00
TOTAL FOR EQUIPMENT,		$187,047 08
TOTAL CHARGES TO PROPERTY ACCOUNTS,		$535,428 43
Property sold (or reduced in valuation on the books) and credited property accounts during the year,		9,809 93
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		$525,618 50

Balance Sheet Sept. 30, 1888.

ASSETS.

Cost of road (estimated),	$30,618,790 22	
Equipment (principal) in E. W. Clark & Co. Car Trust,	130,000 24	
Cost of equipment (estimated equipment belonging to company),	3,875,502 86	
	$34,624,293 32	
Extension west of Waterbury,	2,689,217 71	
Bonds and stock of Connecticut Central R. R.,	290,377 69	
Bonds and stock of Springfield & New London R. R.,	89,492 00	
Steamer William T. Hart (cost less depreciation),	152,912 71	
TOTAL PERMANENT INVESTMENTS,		$37,846,293 43
Cash,	$279,863 48	
Due from agents and companies,	593,430 09	
Materials and supplies,	485,200 95	
TOTAL CASH ASSETS,		$1,358,494 52
Profit & Loss balance,		541,595 21
TOTAL ASSETS,		$39,746,383 16

LIABILITIES.

Capital stock:		$22,200,000 00
Common,	$20,000,000 00	
Preferred,	2,200,000 00	
Funded debt:		15,000,000 00
First mortgage bonds, 7 per cent.,	$6,000,000 00	
First mortgage bonds, 6 per cent.,	4,000,000 00	
Second mortgage bonds, 6 per cent.,	4,002,000 00	
Second mortgage bonds, 3 per cent.,	998,000 00	
Funded indebtedness incurred for purchase of property secured by property purchased,		1,684,508 59
Unfunded debt, viz.:		861,874 57
Interest unpaid,	$229,291 98	
Dividends unpaid,	77,000 00	
Notes payable,	59,106 69	
Vouchers and accounts,	496,475 90	
TOTAL LIABILITIES,		$39,746,383 16

Mileage, Traffic, etc.	
Passenger-train mileage,	1,712,858
Freight-train mileage,	1,498,991
Total Revenue-Train Mileage,	3,211,849
Switching-train mileage,	850,369
Other train mileage,	175,338
Total Train Mileage,	4,237,556
Number of season-ticket passengers,	996.449
Number of local passengers (including season),	6,158,868
Number of through passengers (to and from other roads),	693,511
Total Number of Passengers carried,	6,852,379
Local passenger mileage (local passengers carried one mile),	63,864,714
Through passenger mileage (through passengers carried one mile),	19,454,489
Total Passenger Mileage,	83,319.203
Number tons local freight,	888,830
Number tons through freight (to and from other roads),	1,663,502
Total Number Tons Freight carried,	2,552,332
Local freight mileage (tons local freight carried one mile),	36,414,042
Through freight mileage (tons through freight carried one mile),	164,325,005
Total Freight Mileage,	200,739,047
Average weight of passenger-trains (exclusive of passengers),	77.20 tons.
Average number of cars in passenger-trains,	3.59
Average weight of freight-trains (exclusive of freight),	211.90 tons.
Average number of cars in freight-train,	21.19
Average number of persons employed,	4,129
Miles run by passenger, mail and baggage cars (north, east, south or west),	6,255,762
Miles run by freight-cars (north, east, south or west),	31,921,751
Mileage local passengers (north, east, south or west),	63,864,714
Mileage through passengers (north, east, south or west),	19,454,489
Mileage local freight (north, east, south or west),	36,414,042
Mileage through freight (north, east, south or west),	164,325,005
Description of Road.	
Main line of road from Boston to Hopewell Junction, N. Y.,	214.96 miles.
Main line of road from Hopewell Junction to Fishkill-on-Hudson,	1.71 "
Main line of road from Providence to Willimantic,	58.32 "
Main line of road in Massachusetts,	52.05 "
Main line of road in New York,	30.45 "
Main line of road in Rhode Island,	26.36 "
Main line of road in Connecticut,	166.13 "
Double track on main line,	108.10 "
Same in Massachusetts,	52.05 "
Branches owned by company, viz.:	
Woonsocket Division, Cook Street to Woonsocket (single track),	28.62 "
Ridge Hill Branch (single track),	1.65 "
Dedham to main line at Dedham Junction (single track),	1.53 "
Southbridge Branch, E. Thompson to Southbridge (single track),	17.36 "
Dorrance Street Branch, Providence, R. I. (single track),	.62 "
Freight Branch, Hartford, Conn. (single track),	.67 "
Springfield Division, East Hartford to Springfield (single track), 27.48	34.70 "
Springfield Division, Melrose to West Street (single track), 7.22	
Total length of branches owned by company,	85.15 "
Total length of branches owned by company in Massachusetts,	50 10 "
Total length of branches owned by company in Connecticut,	33.41 "

Total length of branches owned by company in Rhode Island,	1.64	miles.
Total road belonging to this company,	360.14	"
Sidings and other tracks not above enumerated,	136.60	"
Same in Massachusetts,	46.33	"
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	604.84	"
Same in Massachusetts,	200.53	"
Total length of steel rails in tracks, not including steel-top rails, [Weights per yard, 60 and 66 pounds.]	481.15	"
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.		
Rhode Island & Massachusetts R. R., length,	13.60	"
Norwich & Worcester R. R., length,	66.16	"
Rockville R. R., length,	4.43	"
Athol and North Easton (owned by Boston & Albany R. R. Co.) length,	1.20	"
Milford, Franklin & Providence, Milford & Woonsocket and Hopkinton R. R., length,	19.97	"
Total length of above roads,	105.36	"
Total length of above roads in Massachusetts,	46.01	"
Total length of above roads in other States (specifying each):	59.35	"
Rhode Island—Rhode Island & Massachusetts R. R., length,	7.00	"
Connecticut—Norwich & Worcester R. R., length, 47.92 Rockville R. R., length, 4.43	52.35	"
Total miles of road operated by this company,	465.50	"
Total miles of road operated by this company in Massachusetts,	148.16	"
Number of stations in Massachusetts on all *roads operated* by this company,	76	
Number of telegraph offices in same,	35	
Number of stations on all *roads owned* by this company,	151	
Same in Massachusetts,	59	
EQUIPMENT.		
Number of locomotives (leased, 17; owned, 150),	167	
Number of passenger-cars (leased, 16; owned, 169),	185	
Number of parlor, dining and directors' cars (owned, 3),	3	
Number of baggage, mail and express cars (leased, 3; owned, 20),	23	
Number of freight-cars (basis of 8 wheels) (leased, 510; owned, 3,783),	4,293	
Number of other cars (owned, 12),	12	

LIST OF ACCIDENTS.

	FROM CAUSES BEYOND THEIR OWN CONTROL (IN MASSACHUSETTS).		FROM THEIR OWN MISCONDUCT OR CARELESSNESS (IN MASSACHUSETTS).		TOTAL IN MASSACHUSETTS.		TOTAL ON WHOLE ROAD OPERATED.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	–	3	1	8	1	11	1	14
Employees,	3	5	2	46	5	51	15	216
Others,	–	6	12	12	12	22	21	40

STATEMENT OF EACH ACCIDENT IN MASSACHUSETTS.

Oct. 8, 1887. — South Boston: J. A. Pierce fell between cars in motion.

October 8. — Woonsocket Junction: H. R. Fish, ankle jammed while pulling pin.

October 15. — South Boston: W. B. Thomas struck while crossing track in team.

October 20. — Springfield: Geo. Praible, collar bone hurt in coupling.

October 20. — South Boston: Geo. Boyden fell off tender.

October 21. — Douglas: Carl. A. Gee fell off car while setting brake.

October 23. — South Boston: Jas. Crowley struck by telegraph pole.

October 24. — South Boston: Chas. Buckley, finger jammed in pulling pin.

October 26. — Stock Yards: J. F. Gibbons struck while walking on track.

November 7. — Mount Bowdoin: Geo. Pelletier struck by overhead bridge.

November 13. — South Boston: D. Noonan, thumb jammed in coupling.

November 17. — Boston: Michael Marooney run over in yard.

November 19. — Dedham: Frank Warren fell between cars and was run over.

November 25. — South Boston: Edw. Fields, collar bone broken in coupling.

December 6. — South Boston: Edw. Hastings struck in foot by ball of switch.

December 10. — Franklin: H. L. Cummings caught while coupling cars.

December 14. — South Milford: S. C. Neill crushed between tender and car; head-on collision.

December 15. — Oxford: J. S. Swett, hand jammed in uncoupling.

December 17. — South Boston: Arthur Minnock fell in jumping from one car to another.

December 22. — South Boston: C. J. Newton, coupling cars, had arm broken.

Jan. 5, 1888. — North Oxford: W. H. Ehle and J. O'Donnell, hurt, account two parts train colliding.

January 9. — South Boston: Daniel Crowley fell off car.

January 11. — Milford: Geo. Pelletier, hand hurt in uncoupling.

January 12. — Webster: Frank Swift, arm caught in coupling.

January 16. — Milford: A. C. Kinney struck while crossing track in team.

January 17. — South Boston: Fred White sprained knee by slipping on ice.

January 18. — South Boston: Geo. Carpenter jumped from train in motion.

January 24. — Stock Yards: John McDonough struck while walking on track.

January 31. — South Boston: Peter Conley slipped while running on track.

February 4. — Hyde Park: Edw. McGory struck by one train while jumping off another.

February 19. — Ashcroft: Peter Benckert jumped off train in motion.

February 19. — Harvard Street: John Donovan jumped on train in motion.

February 29. — Mount Bowdoin: Michael Halliday struck while walking on track.

March 9. — South Boston: H. L. Cummings struck by overhead bridge.

March 12. — Dudley Street: Chas. Lund jumped off bridge in front of train.

March 16. — Armory: J. Hinett, J. Stapleton, W. Nichols, McKinne, scalded.

March 25. — Woonsocket Junction: Misses M. and A. Reilly struck while crossing track in team.

March 29. — Readville: H. S. Allingham fell out of engine.

April 3. — Woonsocket Junction: W. C. Robidon, spring fell on foot.

April 9. — South Worcester: John Earley jumped off end of train.

April 11. — Islington: Unknown man struck on track.

April 12. — East Longmeadow: O. H. Vinton fell between cars in uncoupling.

April 17. — Walpole: Mrs. John Gray jumped off train in motion.

April 17. — Millis: W. H. Harding struck while crossing track.

April 19. — South Boston: Jos. Cook fell under engine while uncoupling.

May 3. — South Boston: P. J. Fitzgerald fell off ladder of car.

May 7. — South Boston: Wm. Wiswell struck by broken glass.

May 8. — North Webster: Michael Kennedy backed team across track and was struck.

May 11. — Blackstone: Arthur Terite struck while walking on track.

May 17. — Hyde Park: Mrs. T. J. Callahan fell while running across track.

May 23. — Webster: John Morris run over while walking on track.

June 2. — Worcester: T. G. Maloney fell off car and was run over.

June 2. — South Boston: Peter Anderson struck while crossing track.

June 3. — East Longmeadow: six circus employees injured by derailment.

June 9. — Unionville: Morris Kirby, foot caught between drawbars.

June 12. — Ashland: Paul and Chas. Stevens struck while crossing track.

June 21. — Webster: J. Jones, F. Hay and I. Cooper struck by overhead bridge.

June 23. — Springfield: Geo. Burrow fell off car ladder.

June 30. — South Boston: W. Chapman, arm caught while coupling.

July 11. — South Boston: Chas. E. Auld, arm bruised in coupling.

July 12. — South Boston: Wm. H. Bland, arm bruised in coupling.

July 22. — Hyde Park: Michael Troy struck while crossing track.

July 23. — South Boston: John Butler struck while walking on track.

July 26. — Franklin: Michael Maroney struck while standing on track.

July 28. — Boston: P. Foley fell off car while setting brake.

July 28. — East Webster: Thos. Dorrity fell off bridge.

August 2. — South Boston: Thos. Leonard struck by flying glass in coach.

August 3. — South Boston: Thos. Monahan fell off car.

August 11. — South Boston: Thos. Monahan, foot crushed while boarding moving car.

August 15. — South Boston: F. A. Williams jumped off train in motion.

August 15. — South Boston: Mary McGlynn caught between wagon and car.

August 16. — South Boston: Wm. H. Bland struck by lumber alongside track.

August 21. — Norwood Central: P. Sweeney slightly squeezed in uncoupling.

August 22. — Dudley Street: C. J. Hutchinson, finger bruised in uncoupling.

August 26. — Woonsocket Junction: Mrs. P. Bradley struck by stone thrown through window.

August 28. — Medway: Mrs. M. McGovern struck while crossing track.

August 28. — Millville: E. E. Wentworth hurt by rail falling off car.

August 30. — Hyde Park: —— Robinson struck while crossing track.

September 2. — Boston: Wm. Mahoney hurt while inspecting cars.

September 7. — South Boston: E. Jones, arm hurt while coupling cars.

September 15. — South Boston: M. Flaherty and Miss Long struck while crossing track.

September 18. — Boston: C. L. Gomey struck by bell snapper.

September 21. — Webster: Frank Swift fell off car.

September 21. — Norwood Central: N. McGroary hurt while handling rail.

September 24. — South Boston: Katie Bennett struck by stone thrown through window.

September 26. — East Hartford: Matt. McGraw fell from top of car.

September 26. — Mattapan: John Duffan and unknown man struck while walking on track.

General Information.	
Maximum weight of locomotives in working order,	55 tons.
Average weight of locomotives in working order,	40 "
Maximum weight of tenders full of fuel and water,	33½ "
Average weight of tenders full of fuel and water,	25 "
Maximum weight of passenger-cars,	32 "
Average weight of passenger-cars,	21½ "
Average weight of mail and baggage cars,	16 "
Average weight of 8-wheel box freight-cars,	10 "
Average weight of 4-wheel box freight-cars,	5 "
Average weight of 8-wheel platform-cars,	7 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	43 feet 11 in.
Total length of heaviest engine and tender over all,	53 " 3 "
What telegraph companies own a line on your right of way, and how many miles does each own? Western Union Telegraph Company,	2,335.4 miles.

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When built.
Quincy Street, Boston,	Plate Girder.	Iron.	44 feet 6 in.	Dec., 1887.
Canal Street, Blackstone,	" "	"	50 "	April, 1888.
Canal at Blackstone,	Triangular Truss.	Iron and Steel.	106 "	April, 1888.

Bridges.	
Number of trestle bridges of 25 feet length and upwards,*	12
Aggregate length of same for single track (997 feet).	
Aggregate length of same for double track (1,372 feet).	
Number of spans of stone bridges of 25 feet and upwards,*	8
Aggregate length of same for double track (300 feet).	
Number of spans of iron bridges of 25 feet and upwards,*	28
Aggregate length of same for double track (1,360 feet).	
Aggregate length of same for triple track (58 feet).	
Number of spans of timber bridges of 25 feet and upwards,*	20
Aggregate length of same for single track (862 feet).	
Aggregate length of same for double track (951 feet).	
Aggregate length of same for triple track (109 feet).	
Number of crossings of highways at grade,*	103
Number of crossings of highways over railroad,	37
Number of crossings of highways under railroad,	30
Number of highway bridges 18 feet above track,	15
Number of highway bridges less than 18 feet above track,	22
Height of lowest bridge above the rail:	
On Woonsocket Division,	13 feet 9 in.
On main line,	14 " 3 "
Number of crossings at which gates or flagmen are maintained,*	20
Number of crossings at which electric signals are maintained,*	2
Number of crossings at which there are neither signals nor flagmen,*	81

* In Massachusetts, on miles road owned.

Number of railroad crossings at grade (specifying each) : * .	4
Old Colony Railroad at Walpole.	
Old Colony Railroad at Medfield.	
Milford, Franklin & Providence at Bellingham.	
Norwich & Worcester at Webster.	
Number of railroad crossings over other railroads (specifying each) : *	3
Boston & Providence Railroad at Readville.	
Woonsocket Division at Woonsocket Junction.	
Providence & Worcester Railroad at Blackstone.	
Number of railroad crossings under other railroads (specifying each) : *	2
Old Colony Railroad at South Boston.	
Main line at Woonsocket Junction.	
Rates of Fare, etc.	
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.175 cents.
Average rate of fare per mile *received* from passengers to and from other roads, ...	2.379 "
Average rate of fare per mile for season-ticket passengers, .	0.831 "
Average rate of fare per mile *received* from *all* passengers, .	2.018 "
Average rate of local freight per ton per mile, . . .	3.09 "
Average rate of freight per ton per mile *received* from freight to and from other roads, ...	1.224 "
Average rate of freight per ton per mile *received* from *all* freight, ...	1.56 "
Relating to Passengers.	
Passengers to Boston (including season), ...	1,350,799
Passengers from Boston (including season), ...	1,332,777
Season-ticket passengers to and from Boston, . . .	300,752
Capital Stock.	
Capital stock authorized by charter, ... { Common, $20,000,000 00 / Preferred, 5,000,000 00	
Capital stock authorized by votes of company, ... { Common, 20,000,000 00 / Preferred, 5,000,000 00	
Total amount paid in, as per Books of the Company, ... { Common, $20,000,000 00 / Preferred, 2,200,000 00	
Total number of stockholders, . { Common, . . 1,085 / Preferred, . . 369	
Number of stockholders in Massachusetts, ... { Common, . . 510 / Preferred, . . 298	
Amount of stock held in Massachusetts, ... { Common, $3,588,100 00 / Preferred, 1,875,100 00	
Debt.	
Funded debt, as follows : —	
First mortgage bonds, due Jan. 1, 1905, rate of interest 7 per cent., ...	$6,000,000 00
Interest paid on same during year, . . $420,000 00	
First mortgage bonds, due Jan. 1, 1905, rate of interest 6 per cent., ...	4,000,000 00
Interest paid on same during year, . . $240,000 00	
Second mortgage bonds, due Aug. 1, 1902, rate of interest 6 per cent., ...	4,002,000 00
Interest paid on same during year, . . $229,090 18	
Second mortgage bonds, due Aug. 1, 1902, rate of interest 3 per cent., ...	998,000 00
Interest paid on same during year, . . $29,940 00	
Total Amount of Funded Debt, ...	$15,000,000 00

* In Massachusetts, on miles road owned.

NAME AND RESIDENCE OF OFFICERS.

J. A. Bostwick, *President*, New York. William P. Shinn, *Vice-President*, Boston, Mass. E. P. Vining, *General Traffic Manager*, Boston, Mass. Joseph A. Shinn, *Auditor*, Boston, Mass. M. M. Whittemore, *Assistant Auditor*, Boston, Mass. A. A. Jackson, *General Superintendent*, Boston, Mass. W. W. Jenckes, Boston, Mass.; C. M. Bowman, Hartford, Conn.; G. A. Harris, Norwich, Conn., *Division Freight Agents.* A. C. Kendall, *General Passenger Agent*, Boston, Mass. George B. Phippen, *Treasurer*, Boston, Mass. J. W. Perkins, *Clerk of Corporation and Assistant to President*, Boston, Mass. R. E. Eavenson, Eastern Division; L. W. Palmer, Providence, R. I.; C. H. Platt, Western Division; E. H. Tucker, Woonsocket Division; P. St. M. Andrews, Norwich & Worcester Division, *Division Superintendents.*

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Eustice C. Fitz, Boston, Mass. Jonas H. French, Boston, Mass. William P. Shinn, Boston, Mass. Sterne Morse, Boston, Mass. Moses T. Stevens, North Andover, Mass. Nicholas Sheldon, Providence, R. I. B. F. Vaughan, Providence, R. I. James L. Howard, Hartford, Conn. William H. Stevenson, Bridgeport, Conn. Geo. M. Landers, New Britain, Conn. Thomas Rutter, New York. William H. Starbuck, New York. John L. Macaulay, New York. Alexander E. Orr, New York. Sidney Dillon, New York. Exstine Norton, New York. Henry Hentz, New York. J. A. Bostwick, New York. Arthur Sewall, Portland, Me.

PROPER ADDRESS OF THE COMPANY.

NEW YORK & NEW ENGLAND RAILROAD COMPANY,
BOSTON, MASS.

J. A. BOSTWICK,
WM. P. SHINN,
SIDNEY DILLON,
THOMAS RUTTER,
JAMES L. HOWARD,
B. F. VAUGHAN,
HENRY HENTZ,
A. E. ORR,
EX. NORTON,
J. L. MACAULAY,
Directors.

GEO. B. PHIPPEN,
Treasurer.

A. A. JACKSON,
Superintendent.

STATE OF NEW YORK.

CITY AND COUNTY OF NEW YORK, ss. Nov. 15, 1888. Then personally appeared J. A. Bostwick, Wm. P. Shinn, Sidney Dillon, Thomas Rutter,

James L. Howard, B. F. Vaughan, Henry Hentz, A. E. Orr, Ex. Norton and J. L. Macaulay, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JNO. A. HILLERY,
A Commissioner for the Commonwealth of Massachusetts,
At No. 56 Wall Street, in the City, County and State of New York.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 16, 1888. Then personally appeared Geo. B. Phippen and A. A. Jackson, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

CHARLES R. SAUNDERS,
Justice of the Peace.

NOTE.

The items added to the debit balance of the profit and loss account at the beginning of the year, aggregating $104,947.18, are thus explained: —

First. Item of $2,811.52 worthless accounts charged off. When the present auditor took charge of the accounts of the company, he found some $70,000 of accounts collectible, many of which had been standing from two to five years. Of these, some $60,000 have been collected, and accounts to the amount of $2,811.52 have been found definitely uncollectible, and have been charged off.

Second. The amount of expenditures during the fiscal year for rentals, renewals of roadway, equipment, etc., pertaining to the business of former years, amounts to $83,191.29, and consists of the following items: —

Rhode Island & Massachusetts Improvement account,		$11,342 84
3 passenger-coaches,	$12,900 00	
5 baggage-cars,	9,493 20	
3 combination-cars,	12,000 00	
92 dump coal-cars,	19,792 25	
20 gondola coal-cars,	8,480 00	
18 box cars,	7,533 00	
1 flat car,	300 00	
		70,498 45
Rent of New Britain station July to September, 1887,		1,350 00
Total,		$83,191 29

The explanation of which is as follows: —

The Rhode Island and Massachusetts railroads were leased in 1877 for a period of ten years. These roads were cheaply built with iron rails and temporary wooden culverts at many places, and for four or five years before the expiration of the lease they needed repairs and renewals, which were not made in consequence of the near expiration of the lease. This company made new leases, which took effect Oct. 1, 1887, for ninety-nine years, and in the spring of 1888 the iron rails remaining in the main track were replaced

with new steel, the cross-ties were renewed, and the track was put in first-class order and condition. The expense of this work was $22,685.68, of which one-half was charged to the profit and loss account as representing improvements which should have been made during preceding years, and the balance was charged to operating expenses. After making up the annual report for the preceding year, the present management discovered that there were passenger-coaches, baggage-cars and freight-cars to a considerable number which had been destroyed prior to October, 1886, — most of them in 1882 and 1883, — and which had not been replaced. The management felt it incumbent upon them to replace these cars; but as they had not been destroyed during the current year, and as they had never come into the possession of the present management, it was thought proper and expedient that the expense of their rebuilding should be charged to the profit and loss account. When built, they were actually new cars, but they clearly could not properly be charged to the improvement account; neither had they any relation to the expense of the past year, not having been on the road or used during the year.

The item of rent of New Britain station for the preceding year was charged into this account because the amount had not been ascertained until after the close of the last fiscal year; and, as it was much more than offset by earnings to the amount of $6,260, credited as income of former years, it was believed to be a proper charge to the profit and loss account.

Third. The item of discrepancy in the accounts of the Norwich & Worcester lease, $18,944.37, is believed to have originated in a settlement made in 1879, when a change in the method of settlement with that company was made. It was not discovered until the accounts of the lessee of the Norwich & Worcester Railroad, heretofore kept at Norwich, were transferred to the general books of this company in Boston. The money had been paid long since, but the proper account had not been made of it; and, as it had no relations whatever to the business of the past year, it was charged to the profit and loss account.

It is the desire of the management to make such showing of all the transactions of the company as may be easily understood by the stockholders and the public; and, in the opinion of its officers, it would be as wrong to charge to the operating expenses of the current year items of the above character, which belong to the transactions of former years, and thereby make the annual showing so much worse than the fact, as it would have been to charge to the improvement account expenditures which should belong to maintenance, and thereby make the showing better than the fact.

[Correspondence.]

Commonwealth of Massachusetts.

Board of Railroad Commissioners, No. 20 Beacon Street,
Boston, Dec. 8, 1888.

To the President and Directors of the New York & New England R. R. Co.

Dear Sirs: — In accordance with section 26, chapter 112, Public Statutes, the Board hereby notifies you that the annual return of your company for the year ending Sept. 30, 1888, appears to be defective in that the entry "Expenditures during the fiscal year for rentals, renewals of roadway, equipment, etc., pertaining to the business of former years, $83,191.29," is made in the profit and loss account on page 3 of the return; whereas, the form for the

return contemplates that such entry should be made under the head of operating expenses, on pages 5 and 6. This alteration will necessitate changes in the answers to questions 2, 3 and 7 on page 3, making the answer to question 7 on page 3, "Balance for year (deficit), $51,741.31," instead of "Balance for year (surplus), $31,449.98."

The Board desire to say that it has been considered permissible for companies to include in the item on page 4 of the return such items as you have placed in the profit and loss account on page 3, viz.: "Premiums on sale of preferred stock, $33,290.42," and "Premium of sale second mortgage bonds, $4,353.75," which course, should you prefer to follow it, would reduce the deficit on page 3 to $14,097.14.

Yours truly,

(Signed) GEORGE G. CROCKER,
For the Board. *Chairman.*

NEW YORK & NEW ENGLAND RAILROAD COMPANY,
VICE-PRESIDENT'S OFFICE, 244 FEDERAL ST.,
BOSTON, MASS., Dec. 14, 1888.

To the Honorable Board of Railroad Commissioners of the State of Massachusetts, Hon. GEORGE G. CROCKER, *Chairman, No. 20 Beacon St., Boston.*

DEAR SIRS: — Your esteemed favor of the 8th inst., addressed to the president and directors of the New York & New England Railroad Company, notifying this company of an alleged defect in its return for the year ending Sept. 30, 1888, and pointing out the manner in which the same should be amended, has been received, and its suggestions have been carefully considered.

I beg to say in reply that the president and directors of this company, under the obligation of their several oaths, made the return in question after a full consideration of the points of objection heretofore noted by your honorable Board, and set forth in your communication of the 8th inst., and they are satisfied that the return is correct in fact, and that they could not conscientiously alter the return in the manner and to the effect indicated in your letter. The reasons for the charges referred to being made against profit and loss, and not against operating expenses, are fully set forth in the report; and in stating the position of the company and the objections of your Board, we shall be glad to have our reasons stated.

To me, individually, it seems very objectionable to allow premium on bonds and stock sold to be included among the current earnings of the company. We have endeavored to set forth in our report all the facts necessary to enable any stockholder or other person to form a proper and correct estimate of the business of the company and of the expenses incurred in carrying it on. I consider the charging of the cost of permanent improvements into operating expenses, without any specification of the same, as a withholding from the stockholders and from the public of information which they are entitled to have, and which they need in order to form a correct opinion of the status of the company.

For the reasons stated, I must therefore respectfully decline to alter our return in the manner suggested.

Yours very respectfully,

(Signed) WM. P. SHINN,
Vice-President.

REPORT

OF THE

NEW YORK, NEW HAVEN & HARTFORD RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$9,970,036 31
Total expense (including taxes),		7,316,782 29
Net income,		2,653,254 02
Rentals:		939,534 82
New Haven & Northampton Railroad,	$280,848 82	
Naugatuck Railroad,	206,000 00	
Harlem River & Port Chester Railroad,	170,000 00	
Boston & New York Air Line Railroad,	146,670 00	
Shore Line Railroad,	100,000 00	
Hartford & Connecticut Valley Railroad,	32,016 00	
Stamford & New Canaan Railroad,	4,000 00	
Interest accrued during year:		80,000 00
On funded debt,	$80,000 00	
Dividends declared (10 per cent.),		1,550,000 00
Balance for the year (surplus),		83,719 20
Balance at commencement of year,	$3,547,808 40	
Deduct: —		
Accounts charged off,	76,585 46	
Balance at commencement of year as so changed,		3,471,222 94
Balance Sept. 30, 1888 (surplus),		3,554,942 14
ANALYSIS OF EARNINGS.		
From local passengers,		$3,366,333 69
through passengers (to and from other roads),		1,555,110 68
express and extra baggage,		322,502 52
mails,		195,596 35
other sources, passenger department,		208,641 34
Total earnings from passenger department,		5,648,184 58
From local freight,		1,570,164 05
through freight (to and from other roads),		2,462,447 76
other sources, freight department,		85,758 61
Total earnings from freight department,		4,118,370 42
TOTAL TRANSPORTATION EARNINGS,		9,766,555 00
Income from all other sources, viz.:		203,481 31
Interest,	$90,098 68	
Rents,	113,382 63	
TOTAL INCOME FROM ALL SOURCES,		$9,970,036 31
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$201,374 36
Legal expenses,		40,741 74
Insurance,		7,654 76
Stationery and printing,		75,766 59
Outside agencies and advertising,		14,520 64

Contingencies and miscellaneous,	$41,956 61
Repairs of bridges (including culverts and cattle-guards),	206,844 76
Repairs of buildings,	288,663 73
Repairs of fences, road-crossings and signs,	40,471 02
Renewal of rails,	154,651 87
[Number tons steel laid, 6,513; tons iron laid, 80.79.]	
Renewal of ties,	133,865 18
[Number laid, 267,610.]	
Repairs of road-bed and track,	814,656 70
Signals,	101,128 72
Repairs of locomotives,	377,218 84
Fuel for locomotives,	551,990 22
[Tons of coal, 177,766; cords of wood, 2,140.]	
Water supply,	37,479 97
Oil and waste,	47,610 43
Wrecks, clearing and removing snow and ice,	80,177 08
Locomotive service,	393,219 94
Repairs of passenger-cars,	372,208 35
Passenger-train service,	330,828 69
Passenger-train supplies,	48,167 69
Repairs of freight-cars,	211,194 59
Freight-train service,	332,206 91
Freight-train supplies,	6,643 05
Rents,	190,004 92
Mileage freight-cars,	86,465 97
Repairs tools and machinery,	55,479 64
Telegraph expenses,	35,616 04
Repairs of docks,	36,999 70
Loss and damage, freight and passenger,	3,106 92
Loss and damage, property and cattle,	4,591 09
Personal injuries,	65,193 35
Barges,	237,771 78
Agents and station service,	1,109,382 64
Station supplies,	86,673 78
TOTAL OPERATING EXPENSES,	$6,822,528 17
Taxes,	494,254 12
TOTAL OPERATING EXPENSES AND TAXES,	$7,316,782 29
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.	
Grading and masonry,	$547,505 87
Bridging,	158,074 60
Superstructure, including rails,	345,585 53
Land, land damages, and fences,	296,185 40
Passenger and freight stations, wood-sheds, and water-stations,	216,069 49
Engineering, agencies, salaries, and other expenses during construction,	998 30
TOTAL FOR CONSTRUCTION,	$1,564,419 19
Locomotives (number, 9),	81,750 00
Parlor and sleeping cars (number, 14),	151,309 37
Passenger, mail and baggage cars (number, 37),	180,130 73
New tugs and floats,	168,799 57
TOTAL FOR EQUIPMENT,	$581,989 67
TOTAL CHARGES TO PROPERTY ACCOUNTS,	2,146,408 86
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,	$2,146,408 86

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$13,711,225 71	
Cost of equipment,	3,061,316 02	
Lands in Massachusetts,	142,914 10	
Lands in Connecticut and New York,	728,112 18	
Docks and wharves,	128,688 31	
New construction,	1,811,472 04	
TOTAL PERMANENT INVESTMENTS,		$19,583,728 36
Cash,	$116,507 42	
Bills receivable (stocks and bonds owned),	2,396,751 34	
Due from agents and companies,	257,829 68	
Materials and supplies,	665,866 33	
TOTAL CASH ASSETS,		3,436,954 77
TOTAL ASSETS,		$23,020,683 13
LIABILITIES.		
Capital stock,		$15,500,000 00
Funded debt,		2,000,000 00
Unfunded debt, viz.:		1,965,740 99
Interest unpaid,	$26,666 67	
Dividends unpaid,	659 00	
Notes payable,	1,300,000 00	
Vouchers and accounts,	638,415 32	
Profit & Loss balance,		3,554,942 14
TOTAL LIABILITIES,		$23,020,683 13
Present or Contingent Liabilities not included in the Balance Sheet.		
Bonds guaranteed by this company or a lien on its road, viz.:		
Bonds of Harlem River & Port Chester Railroad,		$3,000,000 00

MILEAGE, TRAFFIC, ETC.	
Passenger-train mileage,	3,500,258
Freight-train mileage,	1,860,745
TOTAL REVENUE-TRAIN MILEAGE,	5,361,003
Switching-train mileage,	792,230
Other train mileage,	476,108
TOTAL TRAIN MILEAGE,	6,629,341
Number of season-ticket passengers,	3,085,486
Number of local passengers (including season),	10,866,558
Number of through passengers (to and from other roads),	969,254
TOTAL NUMBER OF PASSENGERS CARRIED,	11,835,812
Local passenger mileage (local passengers carried one mile),	216,376,036
Through passenger mileage (through passengers carried one mile),	75,622,036
TOTAL PASSENGER MILEAGE,	291,998,072
Number tons local freight,	1,368,685
Number tons through freight (to and from other roads),	1,800,846
TOTAL NUMBER TONS FREIGHT CARRIED,	3,169,531

Local freight mileage (tons local freight carried one mile),	54,375,470
Through freight mileage (tons through freight carried one mile),	171,892,162
TOTAL FREIGHT MILEAGE,	226,267,632
Average number of persons employed,	7,242
DESCRIPTION OF ROAD.	
Main line of road from Harlem Railroad Junction to Springfield, Mass.,	122.44 miles.
Main line of road in Massachusetts,	5.95 "
Main line of road in Connecticut,	102.45 "
Main line of road in New York,	14.04 "
Double track on main line,	122 44 "
Same in Massachusetts,	5.95 "
Branches owned by company, viz.:	
Berlin to New Britain (single track),	3.18 "
Berlin to Middletown (single track),	9 70 "
Freight track, Hartford (single track),	0.84 "
Windsor Locks to Suffield (single track),	4.32 "
Shore Line Junction to Belle Dock (double track),	1.00 "
Total length of branches owned by company,	19.04 "
Total length of branches owned by company in Connecticut,	19.04 "
Double track on branches,	1 00 "
Total road belonging to this company,	141.48 "
Sidings and other tracks not above enumerated,	*114.83 "
Same in Massachusetts,	4.86 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	379.75 "
Same in Massachusetts,	16.76 "
Total length of steel rails in tracks, not including steel-top rails,	317.90 "
[Weights per yard, main track, 60 to 73½ pounds; sidings, 50 to 60 pounds.]	
Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Boston & New York Air Line Railroad, length,	51.50 miles.
Colchester Railway, length,	3.59 "
Shore Line Railway, length,	48.53 "
Harlem River & Port Chester Railroad, length,	11.50 "
Stamford & New Canaan Railroad, length,	7.66 "
Hartford & Connecticut Valley Railroad, length,	46.20 "
New Haven & Northampton Railroad (main line), length,	94.64 "
New Hartford Branch, length,	14.09 "
Williamsburg Branch, length,	7.51 "
Turner's Falls Branch, length,	10.07 "
Holyoke & Westfield Railroad, length,	10.32 "
Naugatuck Railroad, length,	56.55 "
Watertown & Waterbury Railroad, length,	4.44 "
Total length of above roads,	366 60 "
Total length of above roads in Massachusetts,	71.28 "
Total length of above roads in other States (specifying each):	
Connecticut, length,	283.82 "
New York, length,	11.50 "
Total miles of road operated by this company,	508.08 "
Total miles of road operated by this company in Massachusetts,	77.23 "
Number of stations in Massachusetts on all *roads operated* by this company,	18
Number of telegraph offices in same,	14
Number of stations on all *roads owned* by this company,	59
Same in Massachusetts,	3

* Includes six miles of third and fourth track.

Equipment.	
Number of locomotives (leased, 52; owned, 147),	199
Number of passenger-cars (leased, 79; owned, 329),	408
Number of parlor or sleeping cars (leased, 2; owned, 51),	53
Number of baggage, mail and express cars (leased, 23; owned, 98),	121
Number of freight-cars (basis of 8 wheels) (leased, 1,301; owned, 2,856),	4,157
Number of other cars (leased, 41; owned, 61),	102

List of Accidents.

	From causes beyond their own control (in Massachusetts).		From their own misconduct or carelessness (in Massachusetts).		Total in Massachusetts.		Total on whole road operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	-	-	-	4	12
Employees,	-	8	2	3	2	11	21	172
Others,	-	-	1	9	1	9	80	63

Statement of each Accident in Massachusetts.

Oct. 11, 1887. — Thomas Higgins, yard brakeman at Springfield, was run over and fatally injured by engine No. 107 near car-house.

October 17. — Hubert Squires injured at Greenfield crossing, Turner's Falls Branch, by driving on the crossing ahead of passenger-train.

October 28. — Jos. Gero, brakeman on train No. 69, was thrown from Adams Express car at Springfield, and severely injured about legs and lower part of body. Caused by collision with Boston & Albany engine.

October 30. — Andrew Gill, freight brakeman on extra freight-train, hand injured while coupling cars at Congamond.

November 1. — Peter Curt, an Italian rag-picker, was struck by train No. 26 in yard at Springfield near gas-house. Only slightly injured.

November 26. — John Cleary, Richard Walsh and Robert Hall, trackmen, injured on Holyoke Branch by hand-car being struck by wild engine.

November 30. — Michael Scannell injured at grade crossing, Easthampton.

December 3. — John Curran, freight brakeman, killed at Holyoke. Thrown from car while making up train.

December 15. — Frank Reed, brakeman in yard at Springfield, in running over a car of steam pipe, while switching in yard, fell on the pipe, striking on his hand, breaking his little finger.

December 24. — Henry Varney, brakeman in yard at Springfield, lost end of middle finger on right hand, coupling cars.

December 27. — Daniel Slattery, struck by engine while walking track at Easthampton. Died from injuries next day.

December 29. — A. A. Carpenter injured by passenger-train while working on culvert at Easthampton.

Jan. 14, 1888. — Jos. H. Coffey, brakeman in yard at Springfield, slipped from moving car, everything being covered with ice, lost his hold, fell in front

of car; one foot caught by wheel and one small bone broken. Also injury to small bone of leg.

January 21. — Geo. S. Pease, brakeman in yard at Springfield, had forefinger on left hand injured while coupling engine to caboose car. Flesh wound.

January 30. — B. E. Parsons, brakeman in yard at Springfield, was thrown from car at Union Street; injured on shoulder and leg. Cause, car off track ran into and knocked down crossing-sign, throwing Parsons to the ground.

April 13. — Wm. Callahan, trespasser, was run over in yard at Springfield by switch-train. One leg crushed and head injured. Intoxicated.

May 16. — Unknown man (deaf) injured while walking on track at Leeds.

June 14. — John Flaherty injured while attempting to get on car at Holyoke.

June 18. — D. O'Brien, freight brakeman, injured while switching at South Deerfield.

July 4. — Mr. Shepard and Mr. Pondour injured at Greenfield crossing, Turner's Falls Branch, by driving on crossing in front of passenger-train.

General Information.	
Maximum weight of locomotives in working order,	180.600 lbs.
Average weight of locomotives in working order,	71.456 "
Maximum weight of tenders full of fuel and water,	69.300 "
Average weight of tenders full of fuel and water,	58.550 "
Maximum weight of passenger-cars,	53.520 "
Average weight of passenger-cars,	38.250 "
Average weight of mail and baggage cars,	32.000 "
Average weight of 8-wheel box freight-cars,	22.000 "
Average weight of 4-wheel box freight-cars,	12.035 "
Average weight of 8-wheel platform-cars,	17.300 "
Average weight of 4-wheel platform-cars,	9.470 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	46 feet 7¼ in.
Total length of heaviest engine and tender over all,	55 "

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When Built.
Southwick, Mass., on Northampton Division,	Railroad Plate Girder.	Iron.	25 feet.	Dec., 1887.

Bridges.	
Number of spans of iron bridges of 25 feet and upwards,*	1
Aggregate length of same for single track (50 feet).	
Aggregate length of same for double track (50 feet).	
Aggregate length of same for triple track (50 feet).	
Number of crossings of highways at grade,*	10
Number of crossings of highways under railroad,	3
Height of lowest bridge above the rail,	14½ feet.

* In Massachusetts, on miles road owned.

Number of crossings at which gates or flagmen are maintained,	3
Number of crossings at which electric signals are maintained,	2
Number of crossings at which there are neither signals nor flagmen,*	5

RATES OF FARE, ETC.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.00 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.00 "
Average rate of fare per mile for season-ticket passengers,	0.46 "
Average rate of fare per mile *received* from *all* passengers,	1.68 "
Average rate of local freight per ton per mile,	2.89 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	1.43 "
Average rate of freight per ton per mile *received* from *all* freight,	1.78 "

CAPITAL STOCK.

Capital stock authorized by charter,	$15,500,000 00	
Capital stock authorized by votes of company,	15,500,000 00	
Capital stock issued (number of shares, 155,000); amount paid in,		$15,500,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		15,500,000 00
Total number of stockholders,	3 564	
Number of stockholders in Massachusetts,	491	
Amount of stock held in Massachusetts,	$2,194,700 00	

DEBT.

Funded debt, as follows: —		
First mortgage bonds due 1903, rate of interest 4 per cent.,		$2,000,000 00
Interest paid on same during year,	$80,000 00	

NAME AND RESIDENCE OF OFFICERS.

Charles P. Clark, *President*, New Haven, Conn. E. M. Reed, *Vice-President*, New Haven, Conn. H. M. Kochersperger, *Comptroller*, New Haven, Conn. S. C. Fleetwood, *Auditor*, New Haven, Conn. O. M. Shepard, *General Superintendent*, New Haven, Conn. Chas. Rockwell, *General Freight Agent*, New Haven, Conn. C. T. Hempstead, *General Passenger Agent*, New Haven, Conn. W. L. Squire, *Treasurer*, New Haven, Conn. Wm. D. Bishop, Jr., *Secretary*, Bridgeport, Conn.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Chas. P. Clark, New Haven, Conn. Edward M. Reed, New Haven, Conn. Geo. H. Watrous, New Haven, Conn. E. H. Trowbridge, New Haven, Conn. Henry C. Robinson, Hartford, Conn. Henry S. Lee, Springfield, Mass. Wm. D Bishop, Bridgeport, Conn. Nathaniel Wheeler, Bridgeport, Conn. Wilson G. Hunt, New York, N. Y. Geo. N. Miller, New York, N. Y. Joseph Park, New York, N. Y. Chauncey M. Depew, New York, N Y. Wm. Rockefeller, New York, N. Y.

* In Massachusetts, on miles road owned.

PROPER ADDRESS OF THE COMPANY.

NEW YORK, NEW HAVEN & HARTFORD RAILROAD COMPANY,
NEW HAVEN, CONN.

CHARLES P. CLARK,
N. WHEELER,
JOSEPH PARK,
E. H. TROWBRIDGE,
HENRY C. ROBINSON,
HENRY S. LEE,
WM. D. BISHOP,
E. M. REED,
GEORGE N. MILLER,
WILSON G. HUNT,
GEO. H. WATROUS,
Directors.
WILLIAM L. SQUIRE,
Treasurer.
O. M. SHEPARD,
General Superintendent.

STATE OF NEW YORK.

CITY OF NEW YORK, ss. Nov. 10, 1888. Then personally appeared Charles P. Clark, N. Wheeler, Joseph Park, E. H. Trowbridge, Henry C. Robinson, Henry S. Lee, William D. Bishop, E. M. Reed, George N. Miller, Wilson G. Hunt and George H Watrous, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHARLES M. CONVILLE,
Notary Public, Kings County.

[Certificate filed in New York County.]

STATE OF CONNECTICUT.

CITY AND COUNTY OF NEW HAVEN. Then personally appeared William L. Squire, treasurer, and O. M. Shepard, general superintendent, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

A. S. MAY,
Notary Public.

REPORT

OF THE

NORTH BROOKFIELD RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Albany Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$3,140 12
Total expense (including taxes),		216 17
Net income,		2,923 95
Dividends declared (3 per cent.),		3,000 00
Balance for the year (deficit),		76 05
Balance at commencement of year,		5,931 09
Balance Sept. 30, 1888 (surplus),		5,855 04
ANALYSIS OF EARNINGS.		
Rents for use of road,		$3,000 00
Income from all other sources, viz.:		140 12
Rent of hall,	$125 00	
Interest on deposit,	15 12	
TOTAL INCOME FROM ALL SOURCES,		$3,140 12
ANALYSIS OF EXPENSES.		
Stationery and printing,		$6 23
TOTAL EXPENSES,		$6 23
Taxes,		209 94
TOTAL EXPENSES AND TAXES,		$216 17

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$105,456 79	
Safe,	75 00	
TOTAL PERMANENT INVESTMENTS,		$105,531 79
Cash,		323 25
TOTAL ASSETS,		$105,855 04
LIABILITIES.		
Capital stock,		$100,000 00
Profit & Loss balance,		5,855 04
TOTAL LIABILITIES,		$105,855 04

Description of Road.	
Main line of road from North Brookfield to East Brookfield,	4.160 miles.
Main line of road in Massachusetts,	4.160 "
Total road belonging to this company,	4.160 "
Sidings and other tracks not above enumerated,	.490 "
Same in Massachusetts,	.490 "
Total Length of Track, computed as Single Track,	4.650 "
Same in Massachusetts,	4.650 "
Number of stations on all *roads owned* by this company,	1
Same in Massachusetts,	1
Bridges.	
Number of trestle bridges of 25 feet length and upwards,	1
Number of crossings of highways at grade,	10
Number of crossings at which there are neither signals nor flagmen,	10
Capital Stock.	
Capital stock authorized by charter, $100,000 00	
Capital stock authorized by votes of company, 100,000 00	
Capital stock issued (number of shares, 1,000); amount paid in,	$100,000 00
Total Amount paid in, as per Books of the Co.,	100,000 00
Total number of stockholders, 49	
Number of stockholders in Massachusetts, 48	
Amount of stock held in Massachusetts, $99,900 00	

Name and Residence of Officers.

Bonum Nye, *President*, North Brookfield, Mass. Alden Batcheller, *Vice-President*, North Brookfield, Mass. John B. Dewing, *Treasurer*, North Brookfield, Mass. Theodore C. Bates, *Clerk of Corporation*, North Brookfield, Mass.

Name and Residence of Directors last Elected.

Bonum Nye, North Brookfield, Mass. Alden Batcheller, North Brookfield, Mass. Theodore C. Bates, North Brookfield, Mass. John B. Dewing, North Brookfield, Mass. Warren Tyler, North Brookfield, Mass. Francis Batcheller, North Brookfield, Mass. Alfred H. Batcheller, Boston, Mass.

Proper Address of the Company.

NORTH BROOKFIELD RAILROAD COMPANY,
North Brookfield, Mass.

BONUM NYE,
THEODORE C. BATES,
WARREN TYLER,
FRANCIS BATCHELLER,
JOHN B. DEWING,
Directors.

JOHN B. DEWING,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. NORTH BROOKFIELD, MASS., Nov. 6, 1888. Then personally appeared Bonum Nye, Theodore C. Bates, Warren Tyler, Francis Batcheller and John B. Dewing, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

GEO. R. HAMANT,
Justice of the Peace.

REPORT

OF THE

NORWICH & WORCESTER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the New York & New England Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$327,450 02
Total expense (including taxes),		57,476 02
Net income,		269,974 00
Rentals:		38,150 00
New London Northern Railroad Company,	$38,150 00	
Interest accrued during year:		24,000 00
On funded debt,	$24,000 00	
Dividends declared (8 per cent.),		207,824 00
Balance at commencement of year,	$872,840 33	
Deduct: —		
Amount added to Norwich & Worcester balance sheet, Sept. 30, 1887, as per note at bottom of page 9 for that year,	46,350 11	
Amount added to Norwich & Worcester balance sheet, Sept. 30, 1887,	21,600 00	
Accrued dividends, June and July, 1887,	34,637 33	
Surplus earnings, June and July, 1887,	12,858 43	
Balance at commencement of year as so changed,		757,394 46
Balance Sept. 30, 1888 (surplus),		757,394 46
ANALYSIS OF EARNINGS.		
Rents for use of road:		$327,450 02
From New York & New England Railroad Company to pay dividends, interest, taxes and corporation expenses.		
TOTAL INCOME FROM ALL SOURCES,		$327,450 02
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$5,465 92
Contingencies and miscellaneous,		1,657 54
TOTAL EXPENSES,		$7,123 46
Taxes,		50,352 56
TOTAL EXPENSES AND TAXES,		$57,476 02

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Passenger and freight stations (at Worcester), wood-sheds and water-stations,		$219,259 62
Franklin Street bridge at Worcester, Mass.,		2,810 98
TOTAL FOR CONSTRUCTION,		$222,070 60
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		$222,070 60

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$3,569,277 95	
Cost of equipment,	179,750 67	
Lands in Massachusetts and Connecticut,	3,107 08	
Stock of Norwich & New York Transportation Company,	270,000 00	
TOTAL PERMANENT INVESTMENTS,		$4,022,135 70
Cash,	$15,540 79	
Due from agents and companies,	79,616 70	
Materials and supplies, and cash transferred to N. Y. & N. E. R. R. Co.,	42,478 62	
Debit balances,	26,750 00	
TOTAL CASH ASSETS,		164,386 11
TOTAL ASSETS,		$4,186,521 81
LIABILITIES.		
Capital stock,		$2,604,400 00
Funded debt,		400,000 00
Unfunded debt, viz.:		424,727 35
Interest unpaid,	$36,750 00	
Dividends unpaid,	3,023 00	
Notes payable,	315,679 68	
Vouchers and accounts,	69,274 67	
Profit & Loss balance,		757,394 46
TOTAL LIABILITIES,		$4,186,521 81

DESCRIPTION OF ROAD.	
Main line of road from Allyn's Point, Conn., to Worcester, Mass., including N. L. N. connection at Norwich,	66 16 miles.
Main line of road in Massachusetts,	18.24 "
Main line of road in Connecticut,	47.92 "
Total road belonging to this company,	66.16 "
Sidings and other tracks not above enumerated,	21.00 "
Same in Massachusetts,	7.60 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	87.16 "
Same in Massachusetts,	25.84 "
Total length of steel rails in tracks, not including steel-top rails,	59.75 "
[Weights per yard, 60 pounds.]	
Number of stations on all *roads owned* by this company,	24
Same in Massachusetts,	9

Bridges.		
Number of spans of stone bridges of 25 feet and upwards,*		2
Number of spans of iron bridges of 25 feet and upwards,*		6
Aggregate length of same for single track (361 ft. 9 in.).		
Number of spans of timber bridges of 25 feet and upwards,*		7
Aggregate length of same for single track (276 ft. 4 in.).		
Number of crossings of highways at grade,*		29
Number of crossings of highways over railroad,		2
Number of crossings of highways under railroad,		5
Number of highway bridges 18 feet above track,		2
Height of lowest bridge above the rail,		18
Number of crossings at which gates or flagmen are maintained,		7
Number of crossings at which there are neither signals nor flagmen,*		22
Number of railroad crossings at grade (specifying each): *		2
New York & New England at Webster.		
Boston & Albany at South Worcester.		
Capital Stock.		
Capital stock authorized by charter,	$3,825,000 00	
Capital stock authorized by votes of company,	3,825,000 00	
Capital stock issued (number of shares, 26,044); amount paid in,		$2,604,400 00
Total Amount paid in, as per Books of the Co.,		2,604,400 00
Total number of stockholders,	793	
Number of stockholders in Massachusetts,	624	
Amount of stock held in Massachusetts,	$2,016,100 00	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due 1897, rate of interest 6 per cent.,		$400,000 00
Interest paid on same during year,	$24,000 00	

Name and Residence of Officers.

Edward L. Davis, *President*, Worcester, Mass. Edw. T. Clapp, *Treasurer and Clerk of Corporation*, Norwich, Conn.

Name and Residence of Directors Last Elected.

Edward L. Davis, Worcester, Mass. Thomas B. Eaton, Worcester, Mass. Samuel Woodward, Worcester, Mass. Josiah H. Clarke, Worcester, Mass. W. Bayard Cutting, New York, N. Y. Lorenzo Blackstone, Norwich, Conn. William A. Slater, Norwich, Conn. George H. Ball, Boston, Mass. Francis H. Dewey, Worcester, Mass.

Proper Address of the Company.

NORWICH & WORCESTER RAILROAD COMPANY,
Norwich, Conn.

THOS. B. EATON,
FRANCIS H. DEWEY,
JOSIAH H. CLARKE,
SAM'L WOODWARD,
Directors.

EDW. T. CLAPP,
Treasurer.

* In Massachusetts, on miles road owned.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. Nov. 20, 1888. Then personally appeared Thomas B. Eaton, Francis H. Dewey, Josiah H. Clarke and Samuel Woodward, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

GEO. E. SMITH,
Justice of the Peace and Notary Public.

STATE OF CONNECTICUT.

NEW LONDON COUNTY, ss. NORWICH, Nov. 15, 1888. Then personally appeared Edw. T. Clapp, treasurer of the Norwich & Worcester Railroad Company, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

IRA L. PECK,
Notary Public.

REPORT

OF THE

OLD COLONY RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$6,693,350 19
Total expense (including taxes),		4,810,595 14
Net income,		1,882,755 05
Rentals:		265,558 79
Fall River Railroad Company,	$13,027 60	
Chatham Railroad Company,	2,252 25	
Nantasket Beach Railroad Company,	4,687 50	
Boston & Providence Railroad Company,	237,381 94	
Attleborough Branch Railroad Company,	4,609 50	
Boston & Lowell Railroad Company,	3,600 00	
Interest accrued during year:		636,367 58
On funded debt,	$587,595 00	
On other debt,	48,772 58	
Dividends declared (7 per cent.),		802,763 50
Balance for the year (surplus),		178,065 18
Balance at commencement of year,		998,909 77
Balance Sept. 30, 1888 (surplus),		1,176,974 95
ANALYSIS OF EARNINGS.		
From local passengers,		$3,000,789 53
through passengers (to and from other roads),		530,085 34
express and extra baggage,		188,761 79
mails,		64,111 59
Total earnings from passenger department,		3,783,748 25
From local freight,		1,635,401 50
through freight (to and from other roads),		781,164 42
Total earnings from freight department,		2,416,565 92
TOTAL TRANSPORTATION EARNINGS,		6,200,314 17
Rents for use of road,		3,600 00
Income from all other sources, viz.:		489,436 02
Rent of tenements,	$79,805 22	
Income from investments,	94,090 50	
Premium on stock sold,	*276,631 25	
Sales of gravel,	10,119 80	
South Boston and Somerset wharves, etc.,	28,789 25	
TOTAL INCOME FROM ALL SOURCES,		$6,693,350 19
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$87,533 65
Legal expenses,		13,617 34
Insurance,		11,177 18
Stationery and printing,		49,683 08

* On the books of the company this item is carried to improvement account.

Outside agencies and advertising,	$40,387 46
Contingencies and miscellaneous,	38,042 50
Repairs of bridges (including culverts and cattle-guards),	137,545 91
Repairs of buildings,	262,225 20
Repairs of fences, road-crossings and signs,	48,355 04
Renewal of rails,	37,712 45
[Number tons steel laid, 2,247; number tons iron laid, 898.]	
Renewal of ties,	113,893 96
[Number laid, 293,698.]	
Repairs of road-bed and track,	714,883 57
Repairs of locomotives,	193,542 66
Fuel for locomotives,	459,445 33
[Tons of coal, 106,033; cords of wood, 492.]	
Water supply,	25,672 81
Oil and waste,	33,445 14
Locomotive service,	326,325 02
Repairs of passenger-cars,	305,649 79
Passenger-train service,	242,006 44
Passenger-train supplies,	26,819 43
Repairs of freight-cars,	178,002 24
Freight-train service,	204,907 69
Freight-train supplies,	3,520 82
Mileage freight-cars,	38,504 89
Telegraph expenses,	65,865 19
Loss and damage, freight and baggage,	4,550 20
Loss and damage, property and cattle,	73,679 63
Personal injuries,	50,468 09
Agents and station service,	*592,150 66
Station supplies,	63,809 73
TOTAL OPERATING EXPENSES,	*$4,443,423 10
Taxes,	367,172 04
TOTAL OPERATING EXPENSES AND TAXES,	$4,810,595 14
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.	
Grading and masonry,	$91,783 95
Bridging,	4,910 58
Superstructure, including rails,	54,065 34
Land, land damages and fences,	63,844 94
Passenger and freight stations, wood-sheds and water-stations,	16,264 29
Engineering, agencies, salaries and other expenses during construction,	2,349 20
TOTAL FOR CONSTRUCTION,	233,218 30
Locomotives (number, 6),	11,200 00
Passenger, mail and baggage cars (number, 17),	25,395 55
Freight and other cars (number, 5),	1,300 00
TOTAL FOR EQUIPMENT,	37,895 55
Other expenditures charged to property account:	
Stock of Old Colony Steamboat Company,	100,000 00
TOTAL CHARGES TO PROPERTY ACCOUNTS,	$371,113 85
Property sold (or reduced in valuation on the books) and credited property accounts during the year:	
Land in Clinton, $1,342 92	
Total credits to property accounts,	1,343 92
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,	$369,770 93

* Of this amount, $172,927.75 is charged on the company's books to the improvement account.

Balance Sheet Sept. 30, 1888.

Assets.

Cost of road,	$18,733,686 38	
Cost of equipment,	2,228,373 30	
Lands in Massachusetts,	457,085 44	
Lands in Rhode Island,	40,100 00	
Stock of Old Colony Steamboat Company,	825,500 00	
Stock of New Bedford, Martha's Vineyard & Nantucket Steamboat Company,	15,340 83	
Stock of Union Freight Railroad Company,	79,014 42	
Stock of Lowell & Framingham Railroad Company,	10,529 69	
Stock of Fall River Railroad Company,	5,967 00	
Bonds and stock of Fall River, Warren & Providence Railroad Company,	348,655 43	
Stock of Sea View Hotel & Wharf Company,	7,270 00	
Stock of Oak Bluffs Land & Wharf Company,	100 00	
Total Permanent Investments,		$22,751,622 49
Cash,	$450,306 40	
Bills receivable,	90,685 02	
Due from agents and companies,	233,164 92	
Materials and supplies,	608,932 90	
Debit balances,	195,498 90	
Total Cash Assets,		1,578,588 14
Boston & Providence Railroad lease account,		1,293,500 00
Total Assets,		$25,623,710 63

Liabilities.

Capital stock,		$11,766,200 00
Liability on outstanding stock of Boston, Clinton, Fitchburg & New Bedford and Lowell & Framingham Railroads,		10,325 00
Funded debt,		11,166,900 00
Unfunded debt, viz.:		1,503,310 68
Interest unpaid,	$21,373 50	
Dividends unpaid,	33,149 41	
Notes payable,	595,561 10	
Vouchers and accounts,	853,226 67	
Profit & Loss balance,		1,176,974 95
Total Liabilities,		$25,623,710 63

Mileage, Traffic, etc.

Passenger-train mileage,	2,589,957
Freight-train mileage,	967,608
Total Revenue-Train Mileage,	3,557,565
Switching-train mileage,	902,370
Other train mileage,	221,169
Total Train Mileage,	4,681,104
Number of season-ticket passengers,	2,638,662
Number of local passengers (including season),	13,733 577
Number of through passengers (to and from other roads),	955,920
Total Number of Passengers carried,	14,689,497
Local passenger mileage (local passengers carried one mile),	164,556,992
Through passenger mileage (through passengers carried one mile),	26,359,601
Total Passenger Mileage,	190,916,593

Number tons local freight,	1,583,343
Number tons through freight (to and from other roads),	826,993
TOTAL NUMBER TONS FREIGHT CARRIED,	2,410,336
Local freight mileage (tons local freight carried one mile),	46,038,647
Through freight mileage (tons through freight carried one mile),	35,451,688
TOTAL FREIGHT MILEAGE,	81,490,335
Average weight of passenger-trains (exclusive of passengers),	180 tons.
Average number of cars in passenger-trains,	7
Average weight of freight-trains (exclusive of freight),	290 tons.
Average number of cars in freight-train),	33
Average number of persons employed,	4,362

DESCRIPTION OF ROAD.

Main line of road from Boston to Plymouth, Provincetown, New Bedford and Newport, and from Taunton to Fitchburg, and Framingham to Lowell,	368.89 miles.
Main line of road in Massachusetts,	352.70 "
Main line of road in Rhode Island,	16.19 "
Double track on main line,	101.71 "
Same in Massachusetts,	101.71 "
Branches owned by company, viz.:	
Dorchester & Milton Branch (single track),	3.30 "
Stoughton Branch (single track),	1.65 "
Shawmut Branch (single track),	2.39 "
Bridgewater Branch (single track),	6.12 "
Brockton Branch (single track),	0.75 "
Granite Branch (single track),	5.41 "
Hyannis Branch (single track),	5.05 "
Wood's Holl Branch (single track),	17.54 "
Middlesex & Taunton Branch (single track),	8.04 "
Extension of Fall River, Warren & Providence Railroad (single track),	2.16 "
Pratt's Junction to Sterling Junction (single track),	5.03 "
Lancaster Branch (single track),	1.63 "
Marlborough Branch (single track),	1.47 "
Framingham Prison Branch (single track),	0.62 "
Attleborough Branch (single track),	8 60 "
Acushnet Branch (single track),	0.35 "
Fairhaven Branch (single track),	15.17 "
Hanover Branch (single track),	7.80 "
Easton Branch (single track),	7.56 "
Total length of branches owned by company,	100.64 "
Total length of branches owned by company in Massachusetts,	100.64 "
Total road belonging to this company,	469.53 "
Sidings and other tracks not above enumerated,	172.30 "
Same in Massachusetts,	169.81 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	743.54 "
Same in Massachusetts,	724.86 "
Total length of steel rails in tracks, not including steel-top rails,	560.47 "
[Weights per yard, 50, 56, 58, 60 and 67 pounds.]	

Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.

Fall River Railroad, length,	12.25 miles.
Chatham Railroad, length,	7.07 "
Nantasket Beach Railroad, length,	6.95 "
Boston & Providence Railroad, length,	63.75 "
Attleborough Branch Railroad, length,	4.00 "
Total length of above roads,	94.020 "
Total length of above roads in Massachusetts,	88.162 "

Total length of above roads in other States (specifying each): Rhode Island,	5.858 miles.
Total miles of road operated by this company,	563 550 "
Total miles of road operated by this company in Massachusetts,	541.502 "
Number of stations in Massachusetts on all *roads operated* by this company,	281
Number of telegraph offices in same,	157
Number of stations on all *roads owned* by this company,	225
Same in Massachusetts,	218
EQUIPMENT.	
Number of locomotives (leased, *66; owned, 146),	212
Number of passenger-cars (leased, *165; owned, 304),	469
Number of parlor or sleeping cars (leased, *24; owned, 12),	36
Number of baggage, mail, and express cars (leased, *22; owned, 42),	64
Number of freight-cars (basis of 8 wheels) (leased, 746; owned, 2,438¾),	3,184¾
Number of other cars (leased, 7; owned, 41),	48

LIST OF ACCIDENTS.

	From causes beyond their own control (in Massachusetts).		From their own misconduct or carelessness (in Massachusetts).		Total in Massachusetts.		Total on whole road operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	–	–	–	–	–	–	–	–
Employees,	3	2	11	12	14	14	14	14
Others,	–	–	22	12	22	12	24	13

LIST OF ACCIDENTS ON THE OLD COLONY RAILROAD FOR THE YEAR ENDING SEPT. 30, 1888.

Oct. 8, 1887. — Joseph Wilkinson and Michael Welch, laborers at South Framingham, being injured while dumping coal.

October 10. — Nahum Cushman of Marshfield being run over in the Kneeland Street station while attempting to board a moving train, and receiving fatal injuries.

October 24. — Michael Carey, a deaf man, being run over and killed while walking on the track at Lowell.

October 29. — An unknown man being run over and killed while lying on the track at Berkley.

November 28. — Frank Creston, a freight brakeman, falling between the cars of a moving train near Quincy Adams, receiving fatal injuries.

December 2. — Jere. Donovan, a freight handler, falling from the top of a freight-car in Boston freight-house, and receiving fatal injuries.

December 2. — Martin Flaherty, a laborer at Lancaster Mills, falling from a moving car at Clinton, and receiving fatal injuries.

December 13. — T. J. Donovan, freight conductor, had a leg broken; J. Fairbanks, brakeman, head injured (fatal); and A. E. Whitney, brakeman, side injured, — caused by a freight-train breaking apart and the two sections coming together at Northborough.

* In 2 of these locomotives, 30 passengers-cars, and 14 baggage-cars, the leased interest averages about 29 per cent.; in 24 parlor-cars, 8 per cent.

December 26. — Charles Sampson, a pedler, being killed at Marshfield while driving across the track in advance of a train.

December 26. — Peter Dorey, a brickmaker, having one foot crushed by a train while lying intoxicated on the track at East Bridgewater.

December 29. — G. W. Clark, freight brakeman, being instantly killed at Clinton while attempting to get upon the brakebeam of an engine that was backing towards him.

Jan. 14, 1888. — Edgar Thompson, while intoxicated, attempting, as is supposed, to board a moving passenger-train at Fayville, and being run over and fatally injured.

January 24. — Frank McWany, a laborer, falling from a car at Taunton while it was in motion, and being instantly killed.

January 24. — Wm. Welch, a carpenter, being run over and killed while walking on the track at Harrison Square.

February 3. — Howard Giles, brakeman, having two fingers crushed while coupling cars at Fitchburg.

February 4. — J. F. Harris, brakeman, having two ribs broken while coupling car and engine at Bridgewater.

February 20. — Isaac Wood, an engineer, had a leg broken in consequence of two engines colliding while shifting at Taunton.

February 28. — John Cushing, while intoxicated and walking on the track between Atlantic and Wollaston, being struck by a train and fatally injured.

February 29. — H. G. Rennie, a freight brakeman, was instantly killed at Lakeview by falling to the track while attempting to pass from a car to the engine of a moving train.

March 12. — Burton Dearborn, brakeman, fell from the top of a car in Boston freight-house, and was run over and instantly killed.

March 15. — John Malley stepped in front of a moving train at Buzzard's Bay, and was instantly killed.

March 17. — Martin Neenan, brakeman, was instantly killed at North Weymouth in attempting to pass from the car to the engine of a moving train.

April 4. — John Thompson and Edgar Nawn were struck by a train while walking on the track at Weymouth, and fatally injured.

May 12. — Arthur Giles of Quincy was found dead on the track at Pope's Mill, and is supposed to have been killed by some train.

May 28. — Geo. Silver, a fireman, fell from the engine at Walnut Hill and was run over, having four toes of one foot crushed.

May 30. — C. H. Callahan, station baggage master, had his collar bone dislocated while attempting to couple an engine and car together at Campello.

June 7. — W. H. Moffitt, yard brakeman, had three fingers of left hand crushed while coupling cars at Fall River.

June 7. — S. V. Reagan, brakeman, fell between the cars of a moving freight-train at South Braintree, and was run over and instantly killed.

June 8. — John F. Kelley was run over and killed while walking on the track at Somerset.

June 12. — Mrs. Ann Jones, being fatally injured by being struck by a train while crossing the track at Clarendon Hills station.

June 19. — E. A. Simpson, brakeman, falling to the ground and receiving internal injuries while attempting to step from a car on one track to a car on another track at North Abington.

June 19. — Nathan T. Joy and Wm. W. Bates were struck by a train while driving across the track at East Weymouth, and fatally injured.

June 22. — Wm. Doyle, aged five, attempted to cross Dorchester Avenue, South Boston, in front of a train, and was struck and internally injured.

July 7. — Leonard Gurney, a deaf man, was struck and killed by a train while walking on the track in Whitman.

July 17. — Lemuel H. Whitney, passenger brakeman, was run over and killed while under the cars in the shed at South Boston.

July 24. — Thomas Griffith, laborer, was struck by a train while walking on the track at Neponset, and fatally injured.

July 28. — Louis Farrell jumped from a train at South Framingham, on which he was stealing a ride, and had several toes of the right foot crushed.

August 14. — Daniel Dailes and Ethel Vala were struck by a train while driving across the track at Sharon Heights. Dailes was somewhat bruised, and Miss Vala (a child) had one leg broken.

August 21. — J. E. Howard, section foreman, was caught by the handle of a hand car and thrown on the track near Raynham, receiving severe injuries.

August 22. — An unknown man, while walking on the track at Neponset, was struck by a train and instantly killed.

August 25. — The body of an unknown man with skull fractured was found lying beside the track at Attleborough. Supposed to have been struck by some train.

August 29. — Wm. R. Couillihan was struck by a train while sitting on the track in an intoxicated condition near Mount Hope station, and had his jaw dislocated and back injured.

August 31. — John Doherty, gateman, was struck by a train while walking on the track at Braintree, and seriously injured.

August 31. — Daniel Shute was struck by an electric signal post near South Boston while leaning off from the steps of a car, and was knocked off, receiving internal injuries.

September 6. — John B. Ingalls, while driving across the track at Somerset, was struck by a train and seriously injured.

September 7. — Orrin F. Carpenter, engineman, stepped from a train at South Boston in front of a train moving in the opposite direction, and was instantly killed.

September 10. — Orrin Fox, a fireman, fell from his engine near Hebronville in some unaccountable way while his train was in motion. He was found on the track some distance back with his skull fractured (fatal).

September 14. — George Peabody, brakeman, was thrown from the top of a car at South Boston, and fatally injured.

September 15. — John Ferris, a deaf man, stepped in front of a train at Satucket, having his head badly cut and body bruised.

September 20. — Mrs. Mary L. Young attempted to cross the tracks at Hyde Park in advance of a moving train, and was struck by it and had one leg crushed; Patrick Tracey, station baggage master, who went to her rescue, was instantly killed by the same train.

September 23. — Lothrop Hinckley, a deaf man, was struck and instantly killed by a train while walking on the track in Barnstable.

September 25. — John Sheehan, while intoxicated and asleep between the tracks at Atlantic, had one of his hands crushed by a passing train.

September 27. — Warren Parmenter, a newsboy, attempting to get off a moving train at Marlborough, had three toes crushed.

September 28. — Owen Tymon, brakeman, had one foot crushed while attempting to couple a car and engine at Roxbury.

General Information.	
Maximum weight of locomotives in working order,	50 tons.
Average weight of locomotives in working order,	38 "
Maximum weight of tenders full of fuel and water,	33 "
Average weight of tenders full of fuel and water,	24 "
Maximum weight of passenger-cars,	29 "
Average weight of passenger-cars,	22 "
Average weight of mail and baggage cars,	16 "
Average weight of 8-wheel box freight-cars,	9 "
Average weight of 4-wheel box freight-cars,	4 "
Average weight of 8-wheel platform-cars,	7 "
Average weight of 4-wheel platform-cars,	3 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	44 feet.
Total length of heaviest engine and tender over all,	54 "
What telegraph companies own a line on your right of way, and how many miles does each own? The telegraph lines upon the road have been constructed in part by the railroad company and in part by the Western Union Telegraph Company, but all are subject to the conditions of a contract for joint use, the ownership to be determined at the expiration of the contract.	
Number of miles of road *operated* by your company not furnished with telegraph facilities:	
Brockton Branch,	.75 miles.

Bridges built within the Year in Massachusetts.

Location.	Kind.	Material.	Length.	When built.	No.
			Ft. In.		
West Bridgewater,	Plate girder.	Iron.	28	Nov., '87, over street.	431
West Bridgewater,	Plate girder.	"	30	Nov., '87, over creek.	433
Wareham,	Plate girder.	"	36	Jan., '88, over creek.	711
Middleborough,	Plate girder.	"	46	Dec., '87, over Nemasket River.	705
Stoughton,	Solid beams	"	20	Mar., '88, over road.	439
Fall River, 2	Plate girder.	"	52 104	April, '88, over streets.	237
Weymouth,	Solid beams.	"	24	April, '88, over creek.	325
Marshfield,	Plate girder.	"	29	April, '88, over road.	399
Norton,	Plate girder.	"	24	April, '88, over creek.	263
Fall River,	Plate girder.	"	28	Sept., '88, over pond.	477
Yarmouth and Dennis,	Plate girder.	"	65	Sept., '88, over Bass River.	731
Wareham,	Plate girder.	"	35	Sept., '88, over Bass River.	715
West Bridgewater,	Plate girder.	"	39 6	Oct., '87, at East Street.	–
West Bridgewater,	Plate girder.	"	38 6	Dec., '87, at Elm Street.	–
West Bridgewater,	Pile bridge.	Wood.	72 8	Oct, '87, over Hockomock River.	435
West Bridgewater,	Stringer.	"	20	Oct., '87, over canal.	437
Boston,	Pile bridge.	"	79 6	May, '88, over Mill Creek.	17
Boston,	Pile bridge.	"	39 6	June, '88, over creek.	15
Boston,	Stringer.	"	13 6	April, '88, over creek.	453
Quincy and Milton,	Pile bridge.	"	74 10	May, '88, over creek.	441
Fall River,	Stringer.	"	22	May, '88, over canal (2 spans).	139
Hanover,	Stringer.	"	26	June, '88, over creek (2 spans).	425
Scituate,	Pile bridge.	"	51	June, '88, over North River.	387
Berkley,	Stringer.	"	16	July, '88, over creek.	227
Wellfleet,	Pile bridge.	"	58 2	July, '88, over creek.	737
Wellfleet,	Pile bridge.	"	61 6	July, '88, over creek.	739
Whitman,	Stringer.	"	32 10	July, '88, over canal.	411
Freetown,	Stringer.	"	18	July, '88, over creek.	231
Somerset,	Trestle.	"	73 9	April, '88.	237
Falmouth,	Stringer.	1 "	35	May, '88.	–
Whitman,	Stringer.	1 "	35	June, '88.	–
Taunton,	Stringer.	"	23	June, '88.	83
Taunton,	Stringer.	"	23	June, '88.	217
Wareham,	Iron highway	Iron.	60	Sept., '88.	

[1] Highway.

Bridges.	
Number of trestle bridges of 25 feet length and upwards,*	4
Aggregate length of same for single track (203 ft. 3 in.).	
Aggregate length of same for double track (272 ft. 2 in.).	
Number of spans of stone bridges of 29 feet and upwards,*	3
Aggregate length of same for single track (95 feet).	
Number of spans of iron bridges of 25 feet and upwards,*	65
Aggregate length of same for single track (2,555 ft. 11 in.).	
Aggregate length of same for double track (921 ft. 8 in.).	
Aggregate length of same for triple track (124 ft. 6 in.).	
Number of spans of timber bridges of 25 feet and upwards,*	14
Aggregate length of same for single track (850 ft. 9 in.).	
Aggregate length of same for double track (50 feet).	
Number of crossings of highways at grade,*	604
Number of crossings of highways over railroad,	†79
Number of crossings of highways under railroad,	†23
Number of highway bridges 18 feet above track,	18
Number of highway bridges less than 18 feet above track,	61
Height of lowest bridge above the rail,	14 feet.
Number of crossings at which gates or flagmen are maintained,	227
Number of crossings at which electric signals are maintained,*	16
Number of crossings at which there are neither signals nor flagmen,*	377
Number of railroad-crossings at grade (specifying each):*	8
Fitchburg Railroad (2).	
Worcester & Nashua Railroad (1).	
New York & New England Railroad (2).	
Boston & Providence Railroad (1).	
Boston & Albany Railroad (1).	
Central Massachusetts Railroad (1).	
Number of railroad-crossings over other railroads (specifying each):*	1
New York & New England Railroad (1).	
Number of railroad-crossings under other railroads (specifying each):*	1
Central Massachusetts Railroad (1).	
Rates of Fare, etc.	
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.25 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.011 "
Average rate of fare per mile for season-ticket passengers,	0.710 "
Average rate of fare per mile *received* from *all* passengers,	1.849 "
Average rate of local freight per ton per mile,	4.1 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	2.2 "
Average rate of freight per ton per mile *received* from *all* freight,	2.9 "
Relating to Passengers.	
Passengers to Boston (including season),	4,099,258
Passengers from Boston (including season),	3,927,365
Season-ticket passengers to and from Boston,	1,625,373
Capital Stock.	
Capital stock authorized by charter,	$12,000,000 00
Capital stock authorized by votes of company,	12,000,000 00

* In Massachusetts, on miles road owned.

† Overhead crossings built within year: 2 on Easton Branch, 1 at Tremont. Underneath crossings built within year: 1 on Easton Branch, 1 at Marshfield.

Capital stock issued (number of shares, 117,662); amount paid in,		$11,766,200 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		11,766,200 00
Total number of stockholders,	5,847	
Number of stockholders in Massachusetts,	5,483	
Amount of stock held in Massachusetts,	$11,033,600 00	

DEBT.

Funded debt, as follows: —		
N. B. & T. Railroad mortgage bonds due July 1, 1881, rate of interest 6 per cent.,		$1,000 00
Fitchburg & Worcester mortgage bonds due Oct. 1, 1881, rate of interest 7 per cent.,		400 00
Agricultural Branch mortgage bonds due July 1, 1884, rate of interest 6 per cent.,		4,000 00
Interest paid on same during year,	$96 00	
Lowell & Framingham Railroad bonds due April 1, 1891, rate of interest 5 per cent.,		2,000 00
Interest paid on same during year,	$100 00	
Old Colony Railroad bonds due April 1, 1891, rate of interest 5 per cent.,		56,000 00
Interest paid on same during year,	$2,775 00	
Mansfield & Framingham mortgage bonds due July 1, 1889, rate of interest 7 per cent,		253,500 00
Interest paid on same during year,	$17,727 50	
B., C. & F. mortgage bonds due Jan. 1, 1890, rate of interest 7 per cent.,		238,000 00
Interest paid on same during year,	$16,800 00	
Old Colony Railroad bonds due March 1, 1894, rate of interest 7 per cent.,		1,692,000 00
Interest paid on same during year,	$118,160 00	
New Bedford Railroad mortgage bonds due July 1, 1894, rate of interest 7 per cent.,		400,000 00
Interest paid on same during year,	$27,615 00	
Old Colony Railroad bonds due June 1, 1895, rate of interest 6 per cent.,		500,000 00
Interest paid on same during year,	$30,000 00	
Old Colony Railroad bonds due Sept. 1, 1896, rate of interest 6 per cent.,		1,100,000 00
Interest paid on same during year,	$66,420 00	
Old Colony Railroad bonds due Aug. 1, 1897, rate of interest 6 per cent.,		2,000,000 00
Interest paid on same during year,	$119,850 00	
Old Colony Railroad bonds due Dec. 1, 1897, rate of interest 4½ per cent.,		200,000 00
Interest paid on same during year,	$9,000 00	
B., C., F. & N. B. Railroad mortgage bonds due Jan. 1, 1910, rate of interest 5 per cent.,		1,912,000 00
Interest paid on same during year,	$96,450 00	
Old Colony Railroad bonds due April 1, 1904, rate of interest 4½ per cent.,		498,000 00
Interest paid on same during year,	$22,320 00	
Old Colony Railroad bonds due July 1, 1904, rate of interest 4 per cent.,		750,000 00
Interest paid on same during year,	$30,000 00	
Old Colony Railroad bonds due July 1, 1938, rate of interest 4 per cent.,		1,560,000 00
Interest paid on same during year,	$30,780 00	
TOTAL AMOUNT OF FUNDED DEBT,		$11,166,900 00

NAME AND RESIDENCE OF OFFICERS.

Charles F. Choate, *President*, Southborough, Mass. Frederick L. Ames, *Vice-President*, North Easton, Mass. James R. Kendrick, *General Manager*, Boston, Mass. Sidney C. Putnam, *General Freight Agent*, Hyde Park, Mass. George L. Connor, *General Passenger Agent*, Boston, Mass. John M. Washburn, *Treasurer*, Boston, Mass. John S. Brayton, *Clerk of Corporation*, Fall River, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles F. Choate, Southborough, Mass. Frederick L. Ames, No. Easton, Mass. Thomas J. Borden, Fall River, Mass. John S. Brayton, Fall River, Mass. Samuel C. Cobb, Boston, Mass. Thomas Dunn, Newport, R. I. George A. Gardner, Boston, Mass. James R. Kendrick, Boston, Mass. Charles L. Lovering, Taunton, Mass. William J. Rotch, New Bedford, Mass. John J. Russell, Plymouth, Mass. Nathaniel Thayer, Boston, Mass. Royal W. Turner, Randolph, Mass.

PROPER ADDRESS OF THE COMPANY.

OLD COLONY RAILROAD COMPANY,

BOX 379, BOSTON, MASS.

CHARLES F. CHOATE,
FRED'K L. AMES,
JNO. J. RUSSELL,
THOS. DUNN,
N. THAYER,
SAM'L C. COBB,
GEO. A. GARDNER,
W. J. ROTCH,
ROYAL W. TURNER,
J. R. KENDRICK,
THOS. J. BORDEN,
CHARLES L. LOVERING,
JOHN S. BRAYTON,
Directors.

JOHN M. WASHBURN,
Treasurer.

J. R. KENDRICK,
General Manager.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 31, 1888. Then personally appeared Charles F. Choate, Frederick L. Ames, John J. Russell, Thomas Dunn, Nathaniel Thayer, Samuel C. Cobb, George A. Gardner, William J. Rotch, Royal W. Turner, James R. Kendrick, Thomas J. Borden, Charles L. Lovering, John S. Brayton and John M. Washburn, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

AUSTIN W. ADAMS,
Justice of the Peace.

REPORT

OF THE

PITTSFIELD & NORTH ADAMS RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Albany Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rents for use of road),		$22,500 00
Net income,		22,500 00
Dividends declared (5 per cent.),		22,500 00
Balance Sheet Sept. 30, 1888.		
ASSETS.		
Cost of road,	$438,752 57	
Cost of equipment,	11,247 43	
TOTAL PERMANENT INVESTMENTS,		$450,000 00
TOTAL ASSETS,		$450,000 00
LIABILITIES.		
Capital stock,		$450,000 00
TOTAL LIABILITIES,		$450,000 00
DESCRIPTION OF ROAD.		
Main line of road from Pittsfield to North Adams,		18.55 miles.
Main line of road in Massachusetts,		18.55 "
Total road belonging to this company,		18.55 "
Sidings and other tracks not above enumerated,		5.13 "
Same in Massachusetts,		5.13 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,		23.68 "
Same in Massachusetts,		23.68 "
Total length of steel rails in tracks, not including steel-top rails,		12.54 "
[Weights per yard, 63 pounds.]		
BRIDGES.		
Number of spans of iron bridges of 25 feet and upwards,		2
Aggregate length of same for single track (60 feet).		
Number of spans of timber bridges of 25 feet and upwards,		3
Aggregate length of same for single track (291 feet).		
Number of crossings of highways at grade,		17
Number of crossings of highways over railroad,		2

Number of highway bridges 18 feet above track,		2
Height of lowest bridge above the rail,		18 feet.
Number of crossings at which gates or flagmen are maintained,		4
Number of crossings at which there are neither signals nor flagmen,		13
Number of railroad-crossings under other railroads (specifying each),		1
Troy & Greenfield.		

Capital Stock.

Capital stock authorized by charter,	$500,000 00	
Capital stock authorized by votes of company,	450,000 00	
Capital stock issued (number of shares, 4,500); amount paid in,		$450,000 00
Total Amount paid in, as per Books of the Co.,		450,000 00
Total number of stockholders,	104	
Number of stockholders in Massachusetts,	99	
Amount of stock held in Massachusetts,	$446,200 00	

Name and Residence of Officers.

Jarvis N. Dunham, *President*, Pittsfield, Mass. Charles E. Stevens, *Treasurer*, Boston, Mass. James A. Rumrill, *Clerk of Corporation*, Springfield, Mass.

Name and Residence of Directors last Elected.

Francis H. Appleton, Peabody, Mass. Jarvis N. Dunham, Pittsfield, Mass. Edward Jackson, Boston, Mass. James A. Rumrill, Springfield, Mass. Charles E. Stevens, Hingham, Mass.

Proper Address of the Company.

PITTSFIELD & NORTH ADAMS RAILROAD COMPANY,
Boston, Mass.

J. N. DUNHAM,
J. A. RUMRILL,
C. E. STEVENS,
FRANCIS H. APPLETON,
Directors.

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Oct. 24, 1888. Then personally appeared Jarvis N. Dunham, James A. Rumrill, Charles E. Stevens and Francis H. Appleton, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

FRANK H. RATCLIFFE,
Justice of the Peace.

REPORT

OF THE

PROVIDENCE & WORCESTER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$1,397,601 15
Total expense (including taxes),		994,980 93
Net income,		402,620 22
Interest accrued during year:		74,520 00
On funded debt,	$74,520 00	
Dividends declared (10 per cent.),		300,000 00
Balance for the year (surplus),		28,100 22
Balance at commencement of year,	$189,825 43	
Add: —		
Assets received from East Providence Land Co.,	6,794 05	
Balance at commencement of year as so changed,		196,619 48
Balance Sept. 30, 1888 (surplus),		224,719 70
ANALYSIS OF EARNINGS.		
From local passengers,		$465,957 85
through passengers (to and from other roads),		73,278 59
express and extra baggage,		20,907 07
mails,		3,549 09
Total earnings from passenger department,		563,692 60
From local freight,		408,949 02
through freight (to and from other roads),		362,251 97
Total earnings from freight department,		771,200 99
TOTAL TRANSPORTATION EARNINGS,		1,334,893 59
Income from all other sources, viz.:		62,707 56
Rent of real estate,	$8,897 16	
Wharf,	53,810 40	
TOTAL INCOME FROM ALL SOURCES,		$1,397,601 15
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$27,583 27
Legal expenses,		4,718 25
Insurance,		180 14
Stationery and printing,		8,047 40
Outside agencies and advertising,		3,796 10
Contingencies and miscellaneous,		18,195 06
Repairs of bridges (including culverts and cattle-guards),		82,452 34

Repairs of buildings,	$49,479 04
Repairs of fences, road-crossings and signs,	6,639 04
Renewal of rails,	33,194 64
[Number tons steel laid, 1,536 $\frac{1472}{2240}$]	
Renewal of ties,	22,041 21
[Number laid, 42,706, and 96,130 feet frog timber.]	
Repairs of road-bed and track,	71,156 62
Repairs of locomotives,	40,697 53
Fuel for locomotives,	99,600 97
[Tons of coal, 21,679.]	
Water supply,	2,781 75
Oil and waste,	3,887 28
Locomotive service,	62,254 65
Repairs of passenger-cars,	49,464 97
Passenger-train service,	40,122 28
Passenger-train supplies,	3,067 92
Repairs of freight-cars,	64,324 61
Freight-train service,	51,193 33
Freight-train supplies,	2,438 34
Mileage freight-cars,	12,237 87
Telegraph expenses,	10,581 68
Loss and damage, freight and baggage,	564 27
Loss and damage, property and cattle,	2,367 50
Personal injuries,	10,595 63
Agents and station service,	141,206 30
Station supplies,	8,860 44
TOTAL OPERATING EXPENSES,	$933,730 43
Taxes,	61,250 50
TOTAL OPERATING EXPENSES AND TAXES,	$994,980 93

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$3,500,000 00	
Cost of equipment,	575,000 00	
TOTAL PERMANENT INVESTMENTS,		$4,075,000 00
Cash,	$457,695 99	
Bills receivable,	2,916 97	
Due from agents and companies,	13,114 58	
Materials and supplies,	130,715 34	
Suspense account,	70,000 00	
TOTAL CASH ASSETS,		674,442 88
TOTAL ASSETS,		$4,749,442 88
LIABILITIES.		
Capital stock,		$3,000,000 00
Funded debt,		1,242,000 00
Unfunded debt, viz.:		80,762 98
Vouchers and accounts,	$80,762 98	
Profit & Loss balance,		224,719 70
Improvement account,		201,960 20
TOTAL LIABILITIES,		$4,749,442 88

Mileage, Traffic, etc.	
Passenger-train mileage,	369,943
Freight-train mileage,	214,705
Total Revenue-Train Mileage,	584,648
Switching-train mileage,	275,145
Other train mileage,	24,856
Total Train Mileage,	884,649
Number of season-ticket passengers,	122,148
Number of local passengers (including season),	2,926,501
Number of through passengers (to and from other roads),	172,494
Total Number of Passengers carried,	3,098,995
Local passenger mileage (local passengers carried one mile),	22,434,913
Through passenger mileage (through passengers carried one mile),	3,054,686
Total Passenger Mileage,	25,489,599
Number tons local freight,	508,228
Number tons through freight (to and from other roads),	585,631
Total Number Tons Freight carried,	1,093,859
Local freight mileage (tons local freight carried one mile),	13,521,064
Through freight mileage (tons through freight carried one mile),	17,140,023
Total Freight Mileage,	30,661,087
Average weight of passenger-trains (exclusive of passengers),	100 tons.
Average number of cars in passenger-trains,	$3\frac{648}{1000}$
Average weight of freight-trains (exclusive of freight),	600 tons.
Average number of cars in freight-train,	40
Average number of persons employed,	911
Description of Road.	
Main line of road from Providence to Worcester,	43.41 miles.
Main line of road in Massachusetts,	25.51 "
Main line of road in Rhode Island,	17.90 "
Double track on main line,	42.38 "
Same in Massachusetts,	24.48 "
Branches owned by company, viz.:	
East Providence Railroad (single track),	7.00 "
Total length of branches owned by company,	7.00 "
Total length of branches owned by company in Massachusetts,	.50 "
Total length of branches owned by company in Rhode Island,	6.50 "
Total road belonging to this company,	50.41 "
Sidings and other tracks not above enumerated,	43.928 "
Same in Massachusetts,	18.563 "
Total Length of Track, computed as Single Track,	136.718 "
Same in Massachusetts,	69.053 "
Total length of steel rails in tracks, not including steel-top rails,	104.63 "
[Weights per yard, 60 and 72 pounds.]	
Total miles of road operated by this company,	50.41 "
Total miles of road operated by this company in Massachusetts,	26.01 "
Number of stations in Massachusetts on all *roads operated* by this company,	12
Number of telegraph offices in same,	9
Number of stations on all *roads owned* by this company,	23
Same in Massachusetts,	12
Equipment.	
Number of locomotives (owned, 37, and $\frac{1}{2}$ interest in 2),	38
Number of passenger-cars (owned, 52),	52
Number of baggage, mail, and express cars (owned, 14),	14
Number of freight-cars (basis of 8 wheels) (owned, 1,199),	1,199
Number of other cars (owned, 15),	15

List of Accidents.

	From causes beyond their own control (in Massachusetts).		From their own misconduct or carelessness (in Massachusetts).		Total in Massachusetts.		Total on whole road operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	1	-	1	-	3
Employees,	-	1	-	1	-	2	1	5
Others,	-	-	2	2	2	2	5	4

Statement of each Accident in Massachusetts.

Nov. 22, 1887. — John Moran, whilst attempting to board a moving freight-train at Blackstone, fell, and was severely injured.

November 25. — John Brosnihan, freight brakeman, while stepping from flat car to box car at Worcester, fell, and was run over and severely injured.

Jan. 28, 1888. — W. J. Dolan attempted to board a moving passenger-train at Worcester, fell, and was slightly injured.

May 21. — Frank Samtamant attempted to cross the track in front of a passenger-train at Sutton, was struck and severely injured.

July 13. — Harootune Surabian, whilst walking on the track at Millbury, was struck by a passenger-train, and killed.

July 28. — Xavier Contois, whilst walking on the track at Quinsigamond, was struck by a freight-train, and killed.

July 30. — Henry Talbot, freight brakeman, whilst climbing a side ladder on box car at Worcester, fell, and was severely injured.

General Information.	
Maximum weight of locomotives in working order,	54 tons.
Average weight of locomotives in working order,	36 "
Maximum weight of tenders full of fuel and water,	32 "
Average weight of tenders full of fuel and water,	20 "
Maximum weight of passenger-cars,	23 "
Average weight of passenger-cars,	17 "
Average weight of mail and baggage cars,	17½ "
Average weight of 8-wheel box freight-cars,	10 "
Average weight of 4-wheel box freight-cars,	5 "
Average weight of 8-wheel platform-cars,	8 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	46 ft. 1 in.
Total length of heaviest engine and tender over all,	56 ft. 7 in.
Number of miles of telegraph owned by company,	46½ miles.
What telegraph companies own a line on your right of way, and how many miles does each own? Western Union Telegraph Company,	44 "
Bridges.	
Number of spans of iron bridges of 25 feet and upwards,	14
Aggregate length of same for single track (194 feet).	
Aggregate length of same for double track (347 feet).	
Number of spans of timber bridges of 25 feet and upwards,*	12
Aggregate length of same for double track (1,153 feet).	
Number of crossings of highways at grade,*	28
Number of crossings of highways over railroad,	5

* In Massachusetts, on miles road owned.

Number of crossings of highways under railroad,	8
Number of highway bridges 18 feet above track,	1
Number of highway bridges less than 18 feet above track,	4
Height of lowest bridge above the rail,	$14\frac{10}{12}$ ft.
Number of crossings at which gates or flagmen are maintained,	13
Number of crossings at which electric signals are maintained,*	24
Number of railroad-crossings at grade (specifying each),* West of Union Depot, Worcester.	1
Number of railroad-crossings under other railroads (specifying each),* New York & New England Railroad.	1

Rates of Fare, etc.

Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.19 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.39 "
Average rate of fare per mile for season-ticket passengers,	0.71 "
Average rate of fare per mile *received* from *all* passengers,	2.12 "
Average rate of local freight per ton per mile,	3.02 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	2.11 "
Average rate of freight per ton per mile *received* from *all* freight,	2.52 "

Capital Stock.

Capital stock authorized by charter, $3,500,000 00	
Capital stock authorized by votes of company, 3,500,000 00	
Capital stock issued (number of shares, 30,000); amount paid in,	$3,000,000 00
Total Amount paid in, as per Books of the Co.,	3,000,000 00
Total number of stockholders, 818	
Number of stockholders in Massachusetts, 442	
Amount of stock held in Massachusetts, $1,702,600 00	

Debt.

Funded debt, as follows: —	
Mortgage bonds due Oct. 1, 1897, rate of interest 6 per cent.,	$1,242,000 00
Interest paid on same during year, $74,520 00	

Name and Residence of Officers.

Moses B. I. Goddard, *President*, Warwick, R. I. O. W. Cooke, *Auditor*, Providence, R. I. Charles Howard, *Superintendent*, Providence, R. I. J. M. Williams, *General Freight Agent*, Providence, R. I. O. H. Briggs, *General Passenger Agent*, Pawtucket, R. I. Wm. A. Leete, *Treasurer and Clerk of Corporation*, Pawtucket, R. I.

Name and Residence of Directors last Elected.

Moses B. I. Goddard, Warwick, R. I. Gideon L. Spencer, Pawtucket, R. I. Elijah B. Stoddard, Worcester, Mass. Lyman A. Cook, Woonsocket, R. I. Frederick Grinnell, Providence, R. I. Joseph E. Davis, Worcester, Mass. Oscar J. Rathbun, Woonsocket, R. I. Jonas G. Clark, Worcester, Mass. Benjamin F. Thurston, Providence, R. I. Charles E. Whitin, Whitinsville, Mass. John W. Danielson, Providence, R. I. G. Marston Whitin, Whitinsville, Mass. George S. Barton, Worcester, Mass. Waldo Lincoln, Worcester, Mass. George F. Blake, Jr., Worcester, Mass.

* In Massachusetts, on miles road owned.

PROPER ADDRESS OF THE COMPANY.

PROVIDENCE & WORCESTER RAILROAD COMPANY,
PROVIDENCE, R. I.

MOSES B. I. GODDARD,
G. L. SPENCER,
LYMAN A. COOK,
FREDERICK GRINNELL,
JOSEPH E. DAVIS,
OSCAR J. RATHBUN,
JONAS G. CLARK,
BENJ. F. THURSTON,
JOHN W. DANIELSON,
GEO. S. BARTON,
WALDO LINCOLN,
GEO. F. BLAKE, JR.,
Directors.

WM. A. LEETE,
Treasurer.

CHARLES HOWARD,
Superintendent.

STATE OF RHODE ISLAND.

PROVIDENCE, SS. PROVIDENCE, Oct. 31, 1888. Then personally appeared Moses B. I. Goddard, president of the Providence & Worcester Railroad Company, Gideon L. Spencer, Lyman A. Cook, Frederick Grinnell, Joseph E. Davis, Oscar J. Rathbun, Jonas G. Clark, Benjamin F. Thurston, John W. Danielson, George S. Barton, Waldo Lincoln and George F. Blake, Jr., directors of said company, and William A. Leete, treasurer, and Charles Howard, superintendent of said company, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

EDWIN METCALF,
Justice of the Peace.

PROVIDENCE, Nov. 7, 1888.

The undersigned, commissioners of the Providence & Worcester Railroad Company, have examined this report, believe it to be correct, and hereby approve the same.

SAMUEL CLARK,
Commissioner for Rhode Island.

THOS. L. NELSON,
Commissioner for Massachusetts.

REPORT OF COMMISSIONERS OF THE PROVIDENCE & WORCESTER RAILROAD COMPANY TO THE LEGISLATURES OF MASSACHUSETTS AND RHODE ISLAND.

At a meeting of the Commissioners of the Providence & Worcester Railroad Company at the company's office in Providence, on the seventh day of November, 1888, for the purpose of deciding what portion of all the expenditures of said company, and its receipts and profits, properly pertain to that part of the road lying in Massachusetts and Rhode Island respectively, and having examined the accounts of said company, we find the net expenditures for construction and equipment to the thirtieth day of September, 1887, —

Were, ...	$4,075,000 00
(No change appears in this account for the year.)	
Which we apportion as follows: —	
To Massachusetts, ...	$1,799,847 17
To Rhode Island, ...	2,275,152 83

The whole amount of receipts and expenditures from Sept. 30, 1887, to Sept. 30, 1888, is as follows: —

RECEIPTS.		
From transportation of passengers, . .	$542,177 47	
transportation of freight, . . .	771,200 99	
transportation of mails, ...	3,549 09	
rents, ...	8,897 16	
express, ...	17,966 04	
wharf earnings, ...	53,810 40	
Total, ...		$1,397,601 15
EXPENDITURES.		
For general traffic expenses, ...	$137,409 90	
passenger traffic expenses, . . .	126,224 76	
freight traffic expenses, ...	226,887 79	
maintenance of way and movement expenses, ...	504,458 48	
Total.		994,980 93
NET EARNINGS, ...		$402,620 22
Which we apportion as follows: —		
To Massachusetts, ...		$201,310 11
To Rhode Island, ...		201,310 11

The Commissioners also find, on examination of the books of said company, that separate accounts of expenditures in Rhode Island and Massachusetts have been kept, agreeably to the Acts of said States creating the Providence & Worcester Railroad Company.

THOS. L. NELSON,
Commissioner for Massachusetts.

SAMUEL CLARK,
Commissioner for Rhode Island.

REPORT

OF THE

PROVIDENCE, WEBSTER & SPRINGFIELD RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Albany Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$4,979 37
Total expense (including taxes),		542 30
Net income,		4,437 07
Interest accrued during year:		3,274 86
On other debt,	$3,274 86	
Balance for the year (surplus),		1,162 21
Balance at commencement of year,		3,586 94
Balance Sept. 30, 1888 (surplus),		4,749 15
ANALYSIS OF EXPENSES.		
Contingencies and miscellaneous,		33 41
Repairs of fences, road-crossings and signs,		2 00
TOTAL EXPENSES,		35 41
Taxes,		506 89
TOTAL EXPENSES AND TAXES,		$542 30
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Grading and masonry,		$10,372 19
Bridging,		11,360 54
Superstructure, including rails,		1,096 27
Land, land damages, and fences,		539 22
Passenger and freight stations, wood-sheds, and water-stations,		486 38
Engineering, agencies, salaries, and other expenses during construction,		2,576 08
TOTAL FOR CONSTRUCTION,		26,430 68
NET ADDITION TO PROPERTY ACCOUNT FOR THE YEAR,		26,430 68

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$218,588 37
Due from agents and companies,	$2,937 40	
Debit balances,	2,184 55	
TOTAL CASH ASSETS,		5,121 95
TOTAL ASSETS,		$223,710 32

Liabilities.		
Capital stock,		$160,000 00
Unfunded debt, viz.:		58,961 17
Vouchers and accounts,	$58,961 17	
Profit & Loss balance,		4,749 15
Total Liabilities,		$223,710 32

Description of Road.	
Main line of road from Webster to Boston & Albany Railroad in Auburn,	11.12 miles.
Main line of road in Massachusetts,	11.12 "
Sidings and other tracks not above enumerated,	1.64 "
Same in Massachusetts,	1.64 "
Total Length of Track, computed as Single Track,	12.76 "
Same in Massachusetts,	12.76 "
Total length of steel rails in tracks, not including steel-top rails,	12.76 "
[Weights per yard, 56 pounds.]	
Number of telegraph offices in same,	1
Number of stations on all *roads owned* by this company,	7
Same in Massachusetts,	7
Bridges.	
Number of spans of timber bridges of 25 feet and upwards,	2
Aggregate length of same for single track (66 feet).	
Number of crossings of highways at grade,	12
Number of crossings of highways over railroad,	2
Number of crossings of highways under railroad,	2
Number of highway bridges 18 feet above track,	2
Height of lowest bridge above the rail,	18 feet.
Number of crossings at which there are neither signals nor flagmen,	12

Capital Stock.		
Capital stock authorized by charter,	$160,000 00	
Capital stock authorized by votes of company,	160,000 00	
Capital stock issued (number of shares, 1,600); amount paid in,		$160,000 00
Total Amount paid in, as per Books of the Co.,		160,000 00
Total number of stockholders,	9	
Number of stockholders in Massachusetts,	9	
Amount of stock held in Massachusetts,	$160,000 00	

Name and Residence of Officers.

H. N. Slater,* *President*, Webster, Mass. H. N. Slater, Jr., *Vice-President*, Webster, Mass. H. N. Slater, Jr., *Treasurer*, Webster, Mass. E. P. Morton, *Clerk of Corporation*, Webster, Mass.

Name and Residence of Directors last Elected.

H. N. Slater,* Webster, Mass. H. N. Slater, Jr., Webster, Mass. E. P. Morton, Webster, Mass. C. K. Labaree, Webster, Mass. Amos Bartlett, Webster, Mass. Edwin Bartlett, North Oxford, Mass. Nath. E. Taft, North Oxford, Mass. Oscar F. Chase, North Oxford, Mass. John Rhodes, Millbury, Mass.

* Deceased Aug. 16, 1888.

PROPER ADDRESS OF THE COMPANY.

PROVIDENCE, WEBSTER & SPRINGFIELD RAILROAD COMPANY,
WEBSTER, MASS.

H. N. SLATER,
A. BARTLETT,
C. K. LABAREE,
Directors.
H. N. SLATER,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. WEBSTER, Nov. 6, 1888. Then personally appeared the above-named H. N. Slater, A. Bartlett and C. K. Labaree, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

JOHN F. HINDS,
Notary Public.

REPORT

OF THE

RHODE ISLAND & MASSACHUSETTS RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the New York & New England Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$10,000 00
Total expense (legal expenses),		72 00
Net income,		9,928 00
Dividends declared (10 per cent.),		10,000 00
Balance for the year (deficit),		72 00
Balance at commencement of year,		15,090 63
Balance Sept. 30, 1888 (surplus),		15,018 63
Balance Sheet Sept. 30, 1888.		
ASSETS.		
Cost of road,		$112,321 13
Cash,		2,716 50
TOTAL ASSETS,		$115,037 63
LIABILITIES.		
Capital stock,		$100,000 00
Unfunded debt, viz.:		19 00
Dividends unpaid,	$19 00	
Profit & Loss balance,		15,018 63
TOTAL LIABILITIES,		$115,037 63
Present or Contingent Liabilities not included in the Balance Sheet.		
Land damage not to exceed		$400 00
DESCRIPTION OF ROAD.		
Main line of road from Franklin to State line,		6.620 miles.
Main line of road in Massachusetts,		6.620 "
Total road belonging to this company,		6.620 "
Sidings and other tracks not above enumerated,		1.006 "
Same in Massachusetts,		1.006 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,		7.626 "
Same in Massachusetts,		7.626 "
Total length of steel rails in tracks, not including steel-top rails,		7.626 "

Number of stations in Massachusetts on all *roads operated* by this company,		2
Number of stations on all *roads owned* by this company,		2
Same in Massachusetts,		2
Bridges.		
Number of crossings of highways at grade,		5
Number of crossings of highways under railroad,		1
Number of highway bridges 18 feet above track,		1
Number of crossings at which there are neither signals nor flagmen,		5
Capital Stock.		
Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock issued (number of shares, 1,000); amount paid in,		$100,000 00
Total Amount paid in, as per Books of the Co.,		100,000 00
Total number of stockholders,	7	
Number of stockholders in Massachusetts,	7	
Amount of stock held in Massachusetts,	$100,000 00	

Name and Residence of Officers.

James P. Ray, *President*, Franklin, Mass. Edgar K. Ray, *Vice-President*, Franklin, Mass. Joseph G. Ray, *Treasurer*, Franklin, Mass. George W. Wiggin, *Clerk of Corporation*, Franklin, Mass.

Name and Residence of Directors last Elected.

James P. Ray, Franklin, Mass. Joseph G. Ray, Franklin, Mass. Edgar K. Ray, Franklin, Mass. James F. Ray, Franklin, Mass. Moses Farnum, Franklin, Mass. George W. Wiggin, Franklin, Mass.

Proper Address of the Company.

RHODE ISLAND & MASSACHUSETTS RAILROAD COMPANY,
Franklin, Mass.

JAMES P. RAY,
JOSEPH G. RAY,
JAMES F. RAY,
MOSES FARNUM,
GEORGE W. WIGGIN,
Directors.

JOSEPH G. RAY,
Treasurer.

Commonwealth of Massachusetts.

Norfolk, ss. Franklin, Nov. 14, 1888. Then personally appeared James P. Ray, Joseph G. Ray, James F. Ray, Moses Farnum and George W. Wiggin, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WILLIAM A. WYCKOFF,
Justice of the Peace.

REPORT

OF THE

SPENCER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Albany Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$3,646 29
Total expense (including taxes),		893 63
Net income,		2,752 66
Interest accrued during year:		228 75
On funded debt,	$225 00	
On other debt,	3 75	
Dividends declared (4½ per cent.),		2,250 00
Balance for the year (surplus),		273 91
Balance at commencement of year,		8,360 35
Balance Sept. 30, 1888 (surplus),		8,634 26
ANALYSIS OF EARNINGS.		
Rents for use of road,		$3,622 29
Income from all other sources, viz.:		24 00
Rent of land,	$24 00	
TOTAL INCOME FROM ALL SOURCES,		$3,646 29
ANALYSIS OF EXPENSES.		
Insurance,		$20 00
Contingencies and miscellaneous,		118 34
TOTAL EXPENSES,		$138 34
Taxes,		755 29
TOTAL EXPENSES AND TAXES,		$893 63

Balance Sheet Sept. 30, 1888.

ASSETS.	
Cost of road,	$62,854 43
Cash,	279 83
TOTAL ASSETS,	$63,134 26
LIABILITIES.	
Capital stock,	$50,000 00
Funded debt,	4,500 00
Profit & Loss balance,	8,634 26
TOTAL LIABILITIES,	$63,134 26

Description of Road.		
Main line of road from Spencer to South Spencer,		2.165 miles.
Main line of road in Massachusetts,		2.165 "
Sidings and other tracks not above enumerated,		.745 "
Same in Massachusetts,		.745 "
Total Length of Track, computed as Single Track,		2.910 "
Same in Massachusetts,		2.910 "
Number of stations on all *roads owned* by this company,		1
Same in Massachusetts,		1
Bridges.		
Number of crossings of highways at grade,		4
Number of crossings at which there are neither signals nor flagmen,		4
Capital Stock.		
Capital stock authorized by charter,	$50,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock issued (number of shares, 500); amount paid in,		$50,000 00
Total Amount paid in, as per Books of the Co.,		50,000 00
Total number of stockholders,	31	
Number of stockholders in Massachusetts,	31	
Amount of stock held in Massachusetts,	$50,000 00	
Debt.		
Funded debt, as follows: —		
First mortgage bonds due Nov. 1, 1889, rate of interest 5 per cent.,		$4,500 00
Interest paid on same during year,	$225 00	

Name and Residence of Officers.

Luther Hill, *President*, Spencer, Mass. Edward R. Wheeler, *Vice-President*, Spencer, Mass. Edward E. Kent, *Treasurer and Clerk of Corporation*, Spencer, Mass.

Name and Residence of Directors last Elected.

Luther Hill, Spencer, Mass. Erastus Jones, Spencer, Mass. Geo. T. Ladd, Spencer, Mass. Edward R. Wheeler, Spencer, Mass. John O'Gara, Spencer, Mass. Jason W. Prouty, Spencer, Mass. Chester T. Linley, Spencer, Mass. Theo. C. Prouty, Spencer, Mass. Edward E. Kent, Spencer, Mass.

Proper Address of the Company.

SPENCER RAILROAD COMPANY,
Spencer, Mass.

LUTHER HILL,
E. R. WHEELER,
EDWARD E. KENT,
JOHN O'GARA,
CHESTER T. LINLEY,
Directors.
EDWARD E. KENT,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. Oct. 20, 1888. Then personally appeared Luther Hill, E. R. Wheeler, Edward E. Kent, John O'Gara and Chester T. Linley, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

J. R. KANE,
Justice of the Peace.

REPORT

OF THE

STOCKBRIDGE & PITTSFIELD RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Housatonic Railroad Company of Connecticut.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$31,647 00
Total expense (including taxes),		7,650 41
Net income,		23,996 59
Interest accrued during year:		70 14
On other debt,	$70 14	
Dividends declared (5.32+ per cent.),		23,905 70
Balance for the year (surplus),		20 75
Balance at commencement of year,		2,842 78
Balance Sept. 30, 1888 (surplus),		2,863 53
ANALYSIS OF EARNINGS.		
Rents for use of road,		$31,409 00
Income from all other sources, viz.:		238 00
Dividend on 34 shares Stockbridge & Pittsfield Railroad stock,	$238 00	
TOTAL INCOME FROM ALL SOURCES,		$31,647 00
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$185 00
Stationery and printing,		23 65
Outside agencies and advertising,		2 00
Contingencies and miscellaneous,		6 60
TOTAL EXPENSES,		$217 25
Taxes,		7,433 16
TOTAL EXPENSES AND TAXES,		$7,650 41

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$448,700 00	
Stock of Stockbridge & Pittsfield R. R. Co.,	2,550 00	
TOTAL PERMANENT INVESTMENTS,		$451,250 00
Cash,		1,134 58
TOTAL ASSETS,		$452,384 58

Liabilities.		
Capital stock,		$448,700 00
Unfunded debt, viz.:		821 05
Dividends unpaid,	$821 05	
Profit & Loss balance,		2,863 53
Total Liabilities,		$452,384 58

Description of Road.		
Main line of road from Van Dusenville to Pittsfield,		22.00 miles.
Main line of road in Massachusetts,		22.00 "
Capital Stock.		
Capital stock authorized by charter,	$550,000 00	
Capital stock authorized by votes of company,	550,000 00	
Capital stock issued (number of shares, 4,487); amount paid in,		$448,700 00
Total Amount paid in, as per Books of the Co.,		448,700 00
Total number of stockholders,	197	
Number of stockholders in Massachusetts,	144	
Amount of stock held in Massachusetts,	$288,400 00	

Name and Residence of Officers.

D. R. Williams, *President*, Stockbridge, Mass. D. A. Kimball, *Treasurer and Clerk of Corporation*, Stockbridge, Mass.

Name and Residence of Directors last Elected.

D. R. Williams, Stockbridge, Mass. Henry W. Taft, Pittsfield, Mass. F. Hoffmann, Stockbridge, Mass. John B. Hull, Stockbridge, Mass. Wm. C. Spaulding, West Stockbridge, Mass. Wm. J. Bartlett, Lee, Mass. D. A. Kimball, Stockbridge, Mass.

Proper Address of the Company.

THE STOCKBRIDGE & PITTSFIELD RAILROAD COMPANY,
Stockbridge, Mass.

D. R. WILLIAMS,
HENRY W. TAFT,
D. A. KIMBALL,
JOHN B. HULL,
Directors.

D. A. KIMBALL,
Treasurer.

Commonwealth of Massachusetts.

Berkshire, ss. Stockbridge, Oct. 2, 1888. Then personally appeared D. R. Williams, John B. Hull and D. A. Kimball, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. H. WILLIS,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

BERKSHIRE, ss. Oct. 4, 1888. Then Henry W. Taft, above named, made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

Before me,

WILLIAM T. FILLEY,
Justice of the Peace.

REPORT

OF THE

STONY BROOK RAILROAD CORPORATION,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to the Boston & Lowell Railroad Company, and is operated by the Boston & Maine Railroad.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$20,000 00
Total expense,		260 95
Net income,		19,739 05
Dividends declared (6½ per cent.),		19,500 00
Balance for the year (surplus),		239 05
Balance at commencement of year,		210 82
Balance Sept. 30, 1888 (surplus),		449 87
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$250 00
Stationery and printing,		10 95
TOTAL EXPENSES,		$260 95

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$276,601 19	
Lands in Massachusetts,	21,492 38	
TOTAL PERMANENT INVESTMENTS,		$298,093 57
Cash,		2,356 30
TOTAL ASSETS,		$300,449 87
LIABILITIES.		
Capital stock,		$300,000 00
Profit & Loss balance,		449 87
TOTAL LIABILITIES,		$300,449 87

DESCRIPTION OF ROAD.	
Main line of road from North Chelmsford to Ayer,	13.16 miles.
Main line of road in Massachusetts,	13.16 "
Total road belonging to this company,	13.16 "
Sidings and other tracks not above enumerated,	.95 "
Same in Massachusetts,	.95 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	14.11 "
Same in Massachusetts,	14.11 "

Bridges.		
Number of spans of timber bridges of 25 feet and upwards,		10
Number of crossings of highways at grade,		13
Number of highway bridges less than 18 feet above track,		3
Number of crossings at which gates or flagmen are maintained,		3
Number of crossings at which there are neither signals nor flagmen,		10
Number of railroad crossings under other railroads (specifying each):		1
Nashua, Acton & Boston.		
Capital Stock.		
Capital stock authorized by charter,	$300,000 00	
Capital stock authorized by votes of the company,	300,000 00	
Capital stock issued (number of shares, 3,000); amount paid in,		$300,000 00
Total Amount paid in, as per Books of the Co.,		300,000 00
Total number of stockholders,	237	
Number of stockholders in Massachusetts,	220	
Amount of stock held in Massachusetts,	$285,800	

Name and Residence of Officers.

James B. Francis, *President*, Lowell, Mass. Jacob Rogers, *Treasurer and Clerk of Corporation*, Lowell, Mass.

Name and Residence of Directors last Elected.

James B. Francis, Lowell, Mass. George Motley, Lowell, Mass. Sewall G. Mack, Lowell, Mass. Henry C. Howe, Lowell, Mass. George F. Richardson, Lowell, Mass. J. Henry Read, Westford, Mass. Jacob Rogers, Lowell, Mass.

Proper Address of the Company.

STONY BROOK RAILROAD CORPORATION,
Lowell, Mass.

GEORGE C. LORD,
AMOS PAUL,
WM. S. STEVENS,
RICHARD OLNEY,
FRANK JONES,
SAMUEL C. LAWRENCE,
J. S. RICKER,
Directors of the Boston & Maine Railroad.

Commonwealth of Massachusetts.

Suffolk, ss. Nov. 28, 1888. Then personally appeared George C. Lord, Amos Paul, William S. Stevens, Richard Olney, Frank Jones, Samuel C. Lawrence and J. S. Ricker, directors of the Boston and Maine Railroad, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. P. JUDD,
Justice of the Peace.

REPORT

OF THE

UNION FREIGHT RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$76,367 15
Total expense (including taxes),		47,532 22
Net income,		28,834 93
Interest accrued during year:		7,582 41
On other debt,	$7,582 41	
Dividends declared (7 per cent.),		21,000 00
Balance for the year (surplus),		252 52
Surplus at commencement of year,		31,153 30
Balance Sept. 30, 1888 (surplus),		31,405 82
ANALYSIS OF EARNINGS.		
From local freight,		$74,469 25
From through freight (to and from other roads),		985 90
Total earnings from freight department,		75,455 15
TOTAL TRANSPORTATION EARNINGS,		75,455 15
Income from all other sources, viz.:		912 00
Rents,	$2 00	
Dividend on 130 shares of stock owned by company,	910 00	
TOTAL INCOME FROM ALL SOURCES,		76,367 15
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$5,739 47
Insurance,		286 80
Stationery and printing,		234 44
Outside agencies and advertising,		2 00
Contingencies and miscellaneous,		383 29
Repairs of buildings,		212 37
Renewal of rails,		301 76
[Number tons steel laid, 7.]		
Repairs of road-bed and track,		8,915 54
Repairs of locomotives,		4,507 58
Fuel for locomotives,		3,039 63
[Tons of coal, 520; cords of wood, 28.]		
Water supply,		231 35
Oil and waste,		313 76
Locomotive service,		6,572 20
Freight-train service,		10,089 28
Freight-train supplies,		43 76
Mileage freight-cars,		850 68
Telegraph expenses,		120 50
Loss and damage, property and cattle,		47 00

Personal injuries,		$56 00
Agents and station service,		3,203 61
Station supplies,		43 21
TOTAL OPERATING EXPENSES,		$45,194 23
Taxes,		2,337 99
TOTAL OPERATING EXPENSES AND TAXES,		$47,532 22

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$401,069 67	
Cost of equipment,	17,000 00	
Stock of Union Freight Railroad Company,	13,000 00	
TOTAL PERMANENT INVESTMENTS,		$431,069 67
Cash,	$12,799 33	
Due from agents and companies,	86 36	
Materials and supplies,	3,335 84	
TOTAL CASH ASSETS,		16,221 53
TOTAL ASSETS,		$447,291 20
LIABILITIES.		
Capital stock,		$300,000 00
Unfunded debt, viz.:		115,885 38
Notes payable,	$110,000 00	
Vouchers and accounts,	5,885 38	
Profit & Loss balance,		31,405 82
TOTAL LIABILITIES,		$447,291 20

MILEAGE, TRAFFIC, ETC.	
Freight-train mileage,	19,901
TOTAL TRAIN MILEAGE,	19,901
Number tons local freight,	260,544
Number tons through freight (to and from other roads),	3,963
TOTAL NUMBER TONS FREIGHT CARRIED,	264,507
Local freight mileage (tons local freight carried one mile),	358,248
Through freight mileage (tons through freight carried one mile),	5,944
TOTAL FREIGHT MILEAGE,	364,192
Average number of persons employed,	43
DESCRIPTION OF ROAD.	
Main line of road from Boston & Lowell Railroad on the north to Old Colony Railroad on the south, in the city of Boston,	2.431 miles.
Main line of road in Massachusetts,	2.431 "
Double track on main line,	.937 "
Same in Massachusetts,	.937 "
Total road belonging to this company,	2.431 "
Sidings and other tracks not above enumerated,	1.280 "
Same in Massachusetts,	1.280 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	4.648 "
Same in Massachusetts,	4.648 "

Total length of steel rails in tracks, not including steel-top rails,	4.648 miles.
[Weights per yard, 88 pounds.]	
Total miles of road operated by this company,	2.431 "
Total miles of road operated by this company in Massachusetts,	2.431 "

EQUIPMENT.

Number of locomotives (owned, 4),	4

LIST OF ACCIDENTS.

	From Causes beyond their own Control (in Massachusetts).		From their own Misconduct or Carelessness (in Massachusetts).		Total in Massachusetts.		Total on Whole Road Operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	-	-	-	-	-
Employees,	-	-	2	1	2	1	2	1
Others,	-	-	2	-	2	-	2	-

STATEMENT OF EACH ACCIDENT IN MASSACHUSETTS.

Oct. 8, 1887. — Wm. H. Whitman of Charlestown, Mass., being run over while walking on the track, and instantly killed.

December 17. — Jas. H. Gormley, conductor, having an arm crushed while coupling cars.

July 12, 1888. — James Norman, a young child, being run over and instantly killed while attempting to crawl under a car.

July 19. — Henry Reed, brakeman, was fatally injured by being caught between the end sills of two cars in coupling.

August 26. — James Keohene, train flagman, was killed while attempting to pass from the car to the engine of a moving train.

RATES OF FARE, ETC.

Average rate of local freight per ton per mile,	2.08 cents.
Average rate of freight per ton per mile *received* from freight to and from other roads,	1.66 "
Average rate of freight per ton per mile *received* from *all* freight,	2.07 "

CAPITAL STOCK.

Capital stock authorized by charter,	$500,000 00	
Capital stock authorized by votes of company,	300,000 00	
Capital stock issued (number of shares, 3,000); amount paid in,		$300,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,		300,000 00
Total number of stockholders,	3	
Number of stockholders in Massachusetts,	3	
Amount of stock held in Massachusetts,	$300,000 00	

NAME AND RESIDENCE OF OFFICERS.

Charles F. Choate, *President*, Southborough, Mass. James R. Kendrick, *General Manager*, Boston, Mass. A. H. Grovenor, *Superintendent*, Boston, Mass. S. C. Putnam, *General Freight Agent*, Hyde Park, Mass. John M. Washburn, *Treasurer and Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles F. Choate, Southborough, Mass. Frederick L. Ames, North Easton, Mass. Samuel C. Cobb, Boston, Mass. James R. Kendrick, Boston, Mass. Nathaniel Thayer, Boston, Mass. Royal W. Turner, Randolph, Mass.

PROPER ADDRESS OF THE COMPANY.

UNION FREIGHT RAILROAD COMPANY,
BOX 379, BOSTON, MASS.

CHARLES F. CHOATE,
FRED'K L. AMES,
N. THAYER,
J. R. KENDRICK,
SAM'L C. COBB,
ROYAL M. TURNER,
Directors.
JOHN M. WASHBURN,
Treasurer.
A. H. GROVENOR,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss Oct. 31, 1888. Then personally appeared Charles F. Choate, Frederick L. Ames, Nathaniel Thayer, James R. Kendrick, Samuel C. Cobb, Royal W. Turner, John M. Washburn and A. H. Grovenor, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

AUSTIN W. ADAMS,
Justice of the Peace.

REPORT

OF THE

VERMONT & MASSACHUSETTS RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Fitchburg Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$194,580 00
Total expense (salaries, etc.),*		3,000 00
Net income,		191,580 00
Dividends declared (6 per cent.),		191,580 00
Balance at commencement of year,		142,002 28
Balance Sept. 30, 1888 (surplus),		142,002 28
Balance Sheet Sept. 30, 1888.		
ASSETS.		
Cost of road,	$3,288,328 01	
Cost of equipment,	261,233 64	
Lands in Massachusetts,	65,973 38	
Turner's Falls Branch,	145,300 63	
TOTAL PERMANENT INVESTMENTS,		$3,760,835 66
Cash,	$9,645 00	
Debit balances (Fitchburg Railroad Company),	576,169 64	
City Institution for Savings in Lowell,	354 53	
TOTAL CASH ASSETS,		586,169 17
TOTAL ASSETS,		$4,347,004 83
LIABILITIES.		
Capital stock,		$3,193,000 00
Funded debt,		1,000,000 00
Unfunded debt, viz.:		12,002 55
Dividends unpaid,	$9,645 00	
Vouchers and accounts,	2,357 55	
Profit & Loss balance,		142,002 28
TOTAL LIABILITIES,		$4,347,004 83
DESCRIPTION OF ROAD.		
Main line of road from Fitchburg to Greenfield,		56.00 miles.
Main line of road in Massachusetts,		56.00 "
Double track on main line,		56.00 "
Same in Massachusetts,		56.00 "
Branches owned by company, viz.:		
Turner's Falls Branch (single track),		2.80 "
Total length of branches owned by company,		2.80 "

* Taxes paid by Fitchburg Railroad Company.

Total length of branches owned by company in Massachusetts,	2.80 miles.
Total road belonging to this company,	58.80 "
Sidings and other tracks not above enumerated,	28.10 "
Same in Massachusetts,	28.10 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	142.90 "
Same in Massachusetts,	142.90 "
Total length of steel rails in tracks, not including steel-top rails,	116.00 "
Number of stations on all *roads owned* by this company,	18
Same in Massachusetts,	18
BRIDGES.	
Number of spans of stone bridges of 25 feet and upwards,	6
Aggregate length of same for double track (184 feet).	
Number of spans of iron bridges of 25 feet and upwards,	37
Aggregate length of same for double track (2,612 feet).	
Aggregate length of same for triple track (68 feet).	
Number of spans of timber bridges of 25 feet and upwards,	14
Aggregate length of same for single track (897 feet).	
Aggregate length of same for double track (137 feet).	
Aggregate length of same for triple track (258 feet).	
Number of crossings of highways at grade,	35
Number of crossings of highways over railroad,	14
Number of crossings of highways under railroad,	14
Number of highway bridges 18 feet above track,	14
Height of lowest bridge above the rail,	18
Number of crossings at which gates or flagmen are maintained,	13
Number of crossings at which electric signals are maintained,	1
Number of crossings at which there are neither signals nor flagmen,	22
Number of railroad-crossings at grade (specifying each):	1
Ware River Railroad.	
Number of railroad-crossings over other railroads (specifying each):	2
New Haven & Northampton at Deerfield.	
New Haven & Northampton at Turner's Falls.	
Number of railroad-crossings under other railroads (specifying each):	2
New London Northern Railroad.	
Connecticut River Railroad.	
CAPITAL STOCK.	
Capital stock authorized by charter, $4,700,000 00	
Capital stock authorized by votes of company, 3,193,000 00	
Capital stock issued (number of shares, 31,930); amount paid in,	$3,193,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,	3,193,000 00
Total number of stockholders, 1,223	
Number of stockholders in Massachusetts, 1,058	
Amount of stock held in Massachusetts, $2,935,700 00	
DEBT.	
Funded debt, as follows: —	
Bonds due May 1, 1903, rate of interest 5 per cent.,	$1,000,000 00
Interest paid on same during year,* $50,000 00	

NAME AND RESIDENCE OF OFFICERS.

Daniel S. Richardson, *President*, Lowell, Mass. Franklin N. Poor, *Treasurer*, Boston, Mass. B. D. Locke, *Clerk of Corporation*, Arlington, Mass.

* Interest paid by Fitchburg Railroad Company.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Daniel S. Richardson, Lowell, Mass. George F. Fay, Fitchburg, Mass. Thornton K. Ware, Fitchburg, Mass. Francis Goodhue, Brattleborough, Vt. Edward L. Davis, Worcester, Mass. Alvah Crocker, Fitchburg, Mass. Charles A. Welch, Boston, Mass.

PROPER ADDRESS OF THE COMPANY.

VERMONT & MASSACHUSETTS RAILROAD COMPANY,
TREASURER'S OFFICE, 17 STATE STREET, BOSTON, MASS.

E. B. PHILLIPS,
ROBERT CODMAN,
RODNEY WALLACE,
FRANKLIN N. POOR,
C. T. CROCKER,
J. Q. ADAMS,
DAVID P. KIMBALL,
JAS. RENFREW, JR.,
GEO. HEYWOOD,
Directors of the Fitchburg Railroad Company.
DAN. A. GLEASON,
Treasurer.
JOHN ADAMS,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, SS. BOSTON, Nov. 20, 1888. Then personally appeared E. B. Phillips, Robert Codman, Rodney Wallace, Franklin N. Poor, C. T. Crocker, J. Q. Adams, David P. Kimball, Jas. Renfrew, Jr., Geo. Heywood, Dan'l A. Gleason and John Adams, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

THOMAS WHITTEMORE,
Justice of the Peace.

REPORT

OF THE

WARE RIVER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Albany Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.	
Total income (rent for use of road),	$52,500 00
Net income,	52,500 00
Dividends declared (7 per cent.),	52,500 00
Balance Sheet Sept. 30, 1888.	
ASSETS.	
Cost of road,	$1,115,163 82
TOTAL ASSETS,	$1,115,163 82
LIABILITIES.	
Capital stock,	$750,000 00
Unfunded debt,	365,163 82
TOTAL LIABILITIES,	$1,115,163 82
DESCRIPTION OF ROAD.	
Main line of road from Palmer to Winchendon,	49.35 miles.
Main line of road in Massachusetts,	49.35 "
Total road belonging to this company,	49.35 "
Sidings and other tracks not above enumerated,	5.86 "
Same in Massachusetts,	5.86 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	55.21 "
Same in Massachusetts,	55.21 "
Total length of steel rails in tracks, not including steel-top rails,	31.44 "
[Weights per yard, 63 to 72 pounds.]	
BRIDGES.	
Number of spans of iron bridges of 25 feet and upwards,	4
Aggregate length of same for single track (118.50 feet.)	
Number of spans of timber bridges of 25 feet and upwards,	5
Aggregate length of same for single track (930.50 feet.)	
Number of crossings of highways at grade,	51
Number of crossings of highways over railroad,	1
Number of crossings of highways under railroad,	5
Number of highway bridges 18 feet above track,	1
Height of lowest bridge above the rail,	18 ft. 3 in.

Number of crossings at which gates or flagmen are maintained,	1
Number of crossings at which there are neither signals nor flagmen,	50
Number of railroad-crossings at grade (specifying each): Vermont & Massachusetts. Cheshire.	2
Number of railroad-crossings under other railroads (specifying each): Massachusetts Central.	1

CAPITAL STOCK.

Capital stock authorized by charter,	$1,000,000 00
Capital stock authorized by votes of company,	750,000 00
Capital stock issued (number of shares, 7,500); amount paid in,	$750,000 00
TOTAL AMOUNT PAID IN, AS PER BOOKS OF THE CO.,	750,000 00
Total number of stockholders,	132
Number of stockholders in Massachusetts,	125
Amount of stock held in Massachusetts,	$595,600 00

NAME AND RESIDENCE OF OFFICERS.

J. A. Rumrill, *President*, Springfield, Mass. C. E. Stevens, *Treasurer*, Hingham, Mass. E. W. Long, *Clerk of Corporation*, Springfield, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

J. A. Rumrill, Springfield, Mass. C. A. Stevens, Ware, Mass. E. B. Gillett, Westfield, Mass. W. W. Whitney, Winchendon, Mass. C. E. Stevens, Hingham, Mass. H. B. Chapin, Boston, Mass. Chas. S. Sargent, Brookline, Mass.

PROPER ADDRESS OF THE COMPANY.

WARE RIVER RAILROAD COMPANY,
SPRINGFIELD, MASS.

J. A. RUMRILL,
C. E. STEVENS,
H. B. CHAPIN,
C. S. SARGENT,
Directors.
C. E. STEVENS,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Oct. 24, 1888. Then personally appeared James A. Rumrill, Charles E. Stevens, Henry B. Chapin and Charles S. Sargent, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

FRANK H. RATCLIFFE,
Justice of the Peace.

REPORT

OF THE

WEST AMESBURY BRANCH RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Maine Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$5,700 00
Total expense (including taxes),		777 36
Net income,		4,922 64
Interest accrued during year:		3,990 00
On funded debt,	$3,990 00	
Dividends declared (1½ per cent.),		855 00
Balance for the year (surplus),		77 64
Balance at commencement of year,		220 05
Balance Sept. 30, 1888 (surplus),		297 69
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$50 00
TOTAL EXPENSES,		$50 00
Taxes,		727 36
TOTAL EXPENSES AND TAXES,		$777 36

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,		$114,000 00
Cash,		346 69
TOTAL ASSETS,		$114,346 69
LIABILITIES.		
Capital stock,		$57,000 00
Funded debt,		57,000 00
Unfunded debt, viz.:		49 00
Interest unpaid,	$14 00	
Dividends unpaid,	35 00	
Profit and loss balance,		297 69
TOTAL LIABILITIES,		$114,346 69

Description of Road.		
Main line of road from Merrimac to Newton, N. H.,		4.45 miles.
Main line of road in Massachusetts,		2.13 "
Main line of road in New Hampshire,		2.32 "
Sidings and other tracks not above enumerated,		0.49 "
Same in Massachusetts,		0.11 "
Total Length of Track, computed as Single Track,		4.94 "
Same in Massachusetts,		2.24 "
Number of stations on all *roads owned* by this company,		2
Same in Massachusetts,		1
Bridges.		
Number of trestle bridges of 25 feet length and upwards,*		1
Number of crossings of highways at grade,*		1
Number of crossings at which there are neither signals nor flagmen,*		1
Capital Stock.		
Capital stock authorized by charter,	$150,000 00	
Capital stock authorized by votes of company,	114,000 00	
Capital stock issued (number of shares, 570); amount paid in,		$57,000 00
Total Amount paid in, as per Books of the Co.,		57,000 00
Total number of stockholders,	30	
Number of stockholders in Massachusetts,	3	
Amount of stock held in Massachusetts,	$41,200 00	
Debt.		
Funded debt, as follows: —		
Bonds due July 1, 1893, rate of interest 7 per cent.,		$57,000 00
Interest paid on same during year,	$3,990 00	

Name and Residence of Officers.

Wm. H. Haskell, *President*, Merrimac, Mass. Daniel J. Poore, *Treasurer and Clerk of Corporation*, Merrimac, Mass.

Name and Residence of Directors last Elected.

Wm. H. Haskell, Merrimac, Mass. Benj. F. Sargent, Merrimac, Mass. Albert Sargent, Merrimac, Mass. John Cleary, Merrimac, Mass. E. R. Brown, Dover, N. H.

Proper Address of the Company.

WEST AMESBURY BRANCH RAILROAD COMPANY,
Merrimac, Mass.

WM. H. HASKELL,
BENJ. F. SARGENT,
ALBERT SARGENT,
Directors.
DANIEL J. POORE,
Treasurer.

* In Massachusetts, on miles road owned.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Oct. 23, 1888. Then personally appeared Wm. H. Haskell, Benj. F. Sargent and Albert Sargent, and made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

D. J. POORE,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Oct. 17, 1888. Then personally appeared D. J. Poore, treasurer, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief. Before me,

CHARLES E. ROWELL,
Justice of the Peace.

REPORT

OF THE

WEST STOCKBRIDGE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Housatonic Railroad Company of Connecticut.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$2,911 34
Total expense (including taxes),		444 69
Net income,		2,466 65
Dividends declared,		2,503 53
Balance for the year (deficit),		36 88
Balance at commencement of year,	$1,230 21	
Deduct: —		
Stock of West Stockbridge Railroad Company (8 shares),	400 00	
Balance at commencement of year as so changed,		830 21
Balance Sept. 30, 1888 (surplus),		793 33
ANALYSIS OF EARNINGS.		
Rents for use of road,		$2,469 36
Income from all other sources, viz.:		441 98
Sale of 8 shares of stock of West Stockbridge Railroad Company,	$441 98	
TOTAL INCOME FROM ALL SOURCES,		$2,911 34
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$120 00
Contingencies and miscellaneous,		6 50
TOTAL EXPENSES,		$126 50
Taxes,		318 19
TOTAL EXPENSES AND TAXES,		$444 69

Balance Sheet Sept. 30, 1888.

ASSETS.	
Cost of road,	$39,600 00
Cash,	793 33
TOTAL ASSETS,	$40,393 33
LIABILITIES.	
Capital stock,	$39,600 00
Profit & Loss balance (surplus),	793 33
TOTAL LIABILITIES,	$40,393 33

Description of Road.		
Main line of road from West Stockbridge to State line,		2.64 miles.
Main line of road in Massachusetts,		2.64 "
Bridges.		
Number of trestle bridges of 25 feet length and upwards,		6
Number of crossings of highways at grade,		4
Capital Stock.		
Capital stock authorized by charter,	$39,600 00	
Capital stock authorized by votes of company,	39,600 00	
Capital stock issued (number of shares, 396); amount paid in,		$39,600 00
Total Amount paid in, as per Books of the Co.,		39,600 00
Total number of stockholders,	1	

Name and Residence of Officers.

W. H. Starbuck, *President*, New York, N. Y. M. E. Stone, *Treasurer and Clerk of Corporation*, New York, N. Y.

Name and Residence of Directors last Elected.

W. H. Starbuck, New York City. J. L. Macaulay, New York City. J. A. Bostwick, New York City. M. E. Stone, New York City. W. H. Stevenson, Bridgeport, Conn.

Proper Address of the Company.

WEST STOCKBRIDGE RAILROAD CORPORATION,
36 Wall Street, New York.

W. H. STARBUCK,
J. L. MACAULAY,
M. E. STONE,
Directors.
M. E. STONE,
Treasurer.

State of New York.

New York City and County, ss. Oct. 8, 1888. Then personally appeared W. H. Starbuck, J. L. Macaulay and M. E. Stone, directors, and M. E. Stone, treasurer, of the West Stockbridge Railroad Company, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JNO. A. HILLERY,
A Commissioner for the State of Massachusetts, at No. 56 Wall Street, New York.

REPORT

OF THE

WORCESTER, NASHUA & ROCHESTER RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the Boston & Maine Railroad Company.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income (rent for use of road),		$250,000 00
Total expense,		2,032 73
Net income,		247,967 27
Interest accrued during year:		85,169 23
On funded debt,	$70,750 00	
On other debt,	14,419 23	
Dividends declared (6 per cent.),		183,834 00
Balance for the year (deficit),		21,035 96
Balance at commencement of year (deficit),	$162,321 10	
Add:		
Old claims on account of personal injuries,	3,699 00	
Other old claims, rebates on freight account, etc.,	4,994 62	
Balance at commencement of year as so changed (deficit),		171,014 72
Balance Sept. 30, 1888 (deficit),		192,050 68
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,325 00
Stationery and printing,		105 01
Outside agencies and advertising,		90 10
Contingencies and miscellaneous,		512 62
TOTAL EXPENSES,		$2,032 73

Balance Sheet Sept. 30, 1888.

ASSETS.		
Cost of road,	$4,138,584 99	
Cost of equipment,	415,336 03	
TOTAL PERMANENT INVESTMENTS,		$4,553,921 02
Cash,	$25,704 57	
Due from agents and companies,	62,865 37	
Worcester, Nashua & Rochester Railroad stock,	35,300 00	
TOTAL CASH ASSETS,		123,869 94
Profit & Loss balance,		192,050 68
TOTAL ASSETS,		$4,869,841 64

Liabilities.		
Capital stock,		$3,099,800 00
Funded debt,		1,457,000 00
Unfunded debt, viz.:		313,041 64
Interest unpaid,	$15,041 64	
Notes payable,	298,000 00	
Total Liabilities,		$4,869,841 64

Description of Road.	
Main line of road from Worcester to Rochester, N. H.,	94.48 miles.
Main line of road in Massachusetts,	39.46 "
Main line of road in New Hampshire,	55.02 "
Double track on main line,	18.13 "
Same in Massachusetts,	18.13 "
Total road belonging to this company,	94.48 "
Sidings and other tracks not above enumerated,	21.22 "
Same in Massachusetts,	13.16 "
Total Length of Track, computed as Single Track,	133.83 "
Same in Massachusetts,	70.75 "
Total length of steel rails in tracks, not including steel-top rails,	79.23 "
[Weights per yard, 59 to 60 pounds.]	
Number of stations on all *roads owned* by this company,	26
Same in Massachusetts,	13
Bridges.	
Number of trestle bridges of 25 feet length and upwards,*	2
Number of spans of stone bridges of 25 feet and upwards,*	2
Number of spans of iron bridges of 25 feet and upwards,*	3
Number of spans of timber bridges of 25 feet and upwards,*	2
Number of crossings of highways at grade,*	37
Number of crossings of highways over railroad,	7
Number of crossings of highways under railroad,	8
Number of highway bridges 18 feet above track,	4
Number of highway bridges less than 18 feet above track,	3
Height of lowest bridge above the rail,	15 feet.
Number of crossings at which gates or flagmen are maintained,	14
Number of crossings at which there are neither signals nor flagmen,*	23
Number of railroad-crossings at grade (specifying each):*	5
Worcester Division Fitchburg Railroad in Worcester.	
Central Massachusetts at Oakdale.	
Old Colony at Clinton.	
Fitchburg and Peterborough & Shirley at Ayer.	

Capital Stock.		
Capital stock authorized by charter,	$3,600,000 00	
Capital stock authorized by votes of company,	3,099,800 00	
Capital stock issued (number of shares, 30,998); amount paid in,		$3,099,800 00
Total Amount paid in, as per Books of the Co.,		3,099,800 00
Total number of stockholders,	821	
Number of stockholders in Massachusetts,	586	
Amount of stock held in Massachusetts,	$2,234,300 00	

* In Massachusetts, on miles road owned.

Debt.	
Funded debt, as follows: —	
Mortgage bonds due, demand,	$12,000 00
Interest paid on same during year, None.	
Mortgage bonds due, demand, rate of interest 5 per cent.,	80,000 00
Interest paid on same during year, $4,000 00	
Mortgage bonds due April 1, 1893, rate of interest 5 per cent.,	250,000 00
Interest paid on same during year, $11,837 50	
Mortgage bonds due Feb. 1, 1895, rate of interest 5 per cent.,	400,000 00
Interest paid on same during year, $19,875 00	
Mortgage bonds due April 1, 1894, rate of interest 5 per cent.,	565,000 00
Interest paid on same, $18,275 00	
Mortgage bonds due July 1, 1906, rate of interest 4 per cent.,	150,000 00
Interest paid on same, $6,000 00	
Total Amount of Funded Debt,	$1,457,000 00

Name and Residence of Officers.

Charles A. Sinclair, *President*, Portsmouth, N. H. T. W. Hammond, *Treasurer and Clerk of Corporation*, Worcester, Mass.

Name and Residence of Directors last Elected.

Charles A. Sinclair, Portsmouth, N. H. Frank Jones, Portsmouth, N. H. James P. Cook, Salem, Mass. George W. Armstrong, Brookline, Mass. George C. Lord, Newton, Mass. Elijah B. Stoddard, Worcester, Mass. Charles Holman, Nashua, N. H. Frank A. McKean, Nashua, N. H. John A. Spalding, Nashua, N. H.

Proper Address of the Company.

THE WORCESTER, NASHUA & ROCHESTER RAILROAD COMPANY,

Worcester, Mass.

CHAS. A. SINCLAIR,
FRANK A. McKEAN,
J. A. SPALDING,
CHARLES HOLMAN,
J. P. COOK,
GEO. W. ARMSTRONG,
E. B. STODDARD,
Directors.

T. W. HAMMOND,
Treasurer.

Commonwealth of Massachusetts.

Suffolk, ss. Oct. 15, 1888. Then personally appeared Chas. A. Sinclair, Frank A. McKean, J. A. Spalding, Charles Holman, J. P. Cook, George W.

Armstrong and T. W. Hammond, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

HENRY T. GOOLD,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. Nov. 7, 1888. Then personally appeared E. B. Stoddard and made oath to the truth of the foregoing statement by him subscribed according to his best knowledge and belief.

FREDERICK W. WARD,
Justice of the Peace.

WORCESTER, Nov. 8, 1888.

The undersigned, commissioner of Worcester & Nashua Railroad Company for the Commonwealth of Massachusetts, having examined the foregoing report, believes it to be correct, and hereby approves the same.

JOHN J. PUTNAM.

The undersigned, commissioner of the Commonwealth of Massachusetts of the Worcester & Nashua Railroad, on the eighth day of November, 1888, examined the accounts of said road to determine what proportion of the receipts and expenditures pertained to that part of the road lying in Massachusetts, and what proportion to that part lying in New Hampshire.

Total income of entire road (rental), ...	$250,000 00
Total income from road lying in Massachusetts, . . .	187,500 00
Total income from road lying in New Hampshire, . . .	62,500 00
Net income of entire road, ...	247,967 27
Net income of road lying in Massachusetts, ...	165,311 52
Net income of road lying in New Hampshire, ...	82,655 75
Total expenses of corporation, ...	2,023 73

And the apportionment is hereby made according to the above figures.

JOHN J. PUTNAM,
Commissioner.

REPORT

OF THE

WORCESTER & SHREWSBURY RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[A narrow-gauge road.]

GENERAL EXHIBIT FOR THE YEAR.		
Total income,		$25,283 82
Total expense (including taxes),		21,736 65
Net income,		3,547 17
Interest accrued during year:		1,770 50
On funded debt,	$1,770 50	
Balance for the year (surplus),		1,776 67
Balance at commencement of year,		24,646 24
Balance Sept. 30, 1888 (surplus),		26,422 91
ANALYSIS OF EARNINGS.		
From local passengers,		$25,110 15
TOTAL TRANSPORTATION EARNINGS,		25,110 15
Income from all other sources, viz.:		173 67
Sale of old rails,	$53 48	
Sale of old ties,	67 57	
Mails,	52 62	
TOTAL INCOME FROM ALL SOURCES,		$25,283 82
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$1,800 00
Insurance,		362 25
Stationery and printing,		20 00
Outside agencies and advertising,		4,227 93
Contingencies and miscellaneous,		296 28
Repairs of buildings,		66 01
Renewal of rails,		103 94
Renewal of ties,		596 52
[Number laid, 2,318.]		
Repairs of road-bed and track,		2,179 27
Repairs of locomotives,		699 09
Fuel for locomotives,		3,638 90
[Tons of coal, 475; cords of wood, 40.]		
Water supply,		227 77
Oil and waste,		365 33
Locomotive service,		2,852 25
Repairs of passenger-cars,		922 13
Passenger-train service,		2,057 00

Passenger-train supplies,	$73 07
Agents and station service,	480 00
Station supplies,	308 84
TOTAL OPERATING EXPENSES,	21,276 58
Taxes,	460 07
TOTAL OPERATING EXPENSES AND TAXES,	$21,736 65

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.

Grading and masonry,	$550 00
Passenger and freight stations, wood-sheds and water-stations,	1,078 25
Engine-houses, car-sheds and turn-tables,	1,627 50
TOTAL FOR CONSTRUCTION,	3,255 75
Passenger, mail and baggage cars (number, 1),	2,790 75
TOTAL CHARGES TO PROPERTY ACCOUNTS,	6,046 50

Balance Sheet Sept. 30, 1888.

ASSETS.

Cost of road,	$57,658 82	
Cost of equipment,	42,801 48	
TOTAL PERMANENT INVESTMENTS,		$100,460 30
Cash,		27 25
TOTAL ASSETS,		$100,487 55

LIABILITIES.

Capital stock,	$36,825 00
Funded debt,	22,000 00
Notes payable,	15,239 64
Profit & Loss balance,	26,422 91
TOTAL LIABILITIES,	$100,487 55

MILEAGE, TRAFFIC, ETC.

Passenger-train mileage,	34,383
TOTAL TRAIN MILEAGE,	34,383
Number of local passengers (including season),	347,580
TOTAL NUMBER OF PASSENGERS CARRIED,	347,580
Local passenger mileage (local passengers carried one mile),	1,042,740
TOTAL PASSENGER MILEAGE,	1,042,740
Average number of cars in passenger-trains,	2
Average number of persons employed,	9

DESCRIPTION OF ROAD.

Main line of road from Worcester to Lake Quinsigamond,	2.7 miles.
Main line of road in Massachusetts,	2.7 "
TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK,	2.7 "
Same in Massachusetts,	2.7 "
Total length of steel rails in tracks, not including steel-top rails,	2.7 "
[Weights per yard, 56 and 60 pounds.]	
Total miles of road operated by this company,	2.7 "
Total miles of road operated by this company in Massachusetts,	2.7 "
Number of stations on all *roads owned* by this company,	5
Same in Massachusetts,	5

Equipment.		
Number of locomotives,		4
Number of passenger-cars,		8
Number of other cars,		4
General Information.		
Number of crossings of highways at grade,		3
Capital Stock.		
Capital stock authorized by charter,	$40,000 00	
Capital stock authorized by votes of company,	36,700 00	
Capital stock issued (number of shares, 367); amount paid in,		$36,700 00
Capital stock paid in on shares not issued,		125 00
Total Amount paid in, as per Books of the Co.,		36,825 00
Total number of stockholders,	10	
Number of stockholders in Massachusetts,	10	
Amount of stock held in Massachusetts,	$36,825 00	
Debt.		
Funded debt, as follows: —		
Bonds due Jan. 1, 1895, rate of interest 6 per cent.,		$22,000 00
Interest paid on same during year,	$1,320 00	
Certificates of indebtedness,		8,000 00
Interest paid on same during year,	450 50	
Total Amount of Funded Debt,		$30,000 00

Name and Residence of Officers.

Horace H. Bigelow, *President*, Worcester, Mass. Irving E. Bigelow, *General Manager*, Worcester, Mass. Solomon K. Hindley, *Auditor*, Worcester, Mass. Irving E. Bigelow, *Superintendent*, Worcester, Mass. Horace H. Bigelow, *Treasurer*, Worcester, Mass. Irving E. Bigelow, *Clerk of Corporation*, Worcester, Mass.

Name and Residence of Directors last Elected.

Josiah H. Clarke, Worcester, Mass. Charles S. Turner, Worcester, Mass. Horace H. Bigelow, Worcester, Mass. George A. Stevens, Worcester, Mass. George H. Ball, Boston, Mass.

Proper Address of the Company.

WORCESTER & SHREWSBURY RAILROAD COMPANY,
Washington Square, Worcester, Mass.

HORACE H. BIGELOW,
JOSIAH H. CLARKE,
C. S. TURNER,
GEORGE A. STEVENS,
Directors.
HORACE H. BIGELOW,
Treasurer.
IRVING E. BIGELOW,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. Oct. 30, 1888. Then personally appeared Horace H. Bigelow, Josiah H. Clarke, Charles S. Turner and George A. Stevens aforesaid, being a majority of the directors of the Worcester & Shrewsbury Railroad Company, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

EBEN F. THOMPSON,
Justice of the Peace.

REPORT

OF THE

HOUSATONIC RAILROAD COMPANY OF CONNECTICUT,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[Showing Revenue, Expenses of Operating, Mileage, Traffic, etc., on Roads Leased and Operated by Company in Massachusetts, the same being the Berkshire, Stockbridge & Pittsfield, and West Stockbridge Railroads.]

ANALYSIS OF EARNINGS.		
From local passengers,		$85,002 01
through passengers (to and from other roads),		34,000 81
express and extra baggage,		7,335 26
mails,		4,653 49
Total earnings from passenger department,		130,991 57
From local freight,		66,022 93
through freight (to and from other roads),		88,030 58
other sources, freight department,		19,511 49
Total earnings from freight department,		173,565 00
TOTAL TRANSPORTATION EARNINGS,		304,556 57
Income from all other sources, viz.:		10,792 93
Rents, wharfage, etc.,	$10,792 93	
TOTAL INCOME FROM ALL SOURCES,		$315,349 50
ANALYSIS OF EXPENSES.		
Salaries of general officers and clerks,		$9,469 66
Legal expenses,		406 02
Insurance,		828 82
Stationery and printing,		2,546 49
Outside agencies and advertising,		490 82
Contingencies and miscellaneous,		9,859 08
Repairs of bridges (including culverts and cattle-guards),		2,451 31
Repairs of buildings,		2,480 15
Repairs of fences, road-crossings and signs,		2,098 15
Renewal of ties,		5,875 69
[Number laid, 9,793.]		
Repairs of road-bed and track,		28,427 25
Repairs of locomotives,		10,291 23
Fuel for locomotives,		25,479 12
[Tons of coal, 7,606.]		
Water supply,		658 88
Oil and waste,		2,556 35
Locomotive service,		17,527 31
Repairs of passenger-cars,		7,130 81
Passenger-train service,		7,667 31

Passenger-train supplies,	$282 46
Mileage passenger-cars,	148 19
Repairs of freight-cars,	11,725 57
Freight-train service,	11,929 73
Freight-train supplies,	253 46
Telegraph expenses,	41 47
Loss and damage, freight and baggage,	342 78
Loss and damage, property and cattle,	96 57
Personal injuries,	1,386 20
Agents and station service,	25,897 00
Station supplies,	3,280 00
TOTAL OPERATING EXPENSES,	$191,627 88
Taxes,	12,180 00
TOTAL OPERATING EXPENSES AND TAXES,	$203,807 88

MILEAGE, TRAFFIC, ETC.

Passenger-train mileage,	137,115
Freight-train mileage,	152,725
TOTAL REVENUE-TRAIN MILEAGE,	289,840
Switching-train mileage,	21,264
Other train mileage,	19,516
TOTAL TRAIN MILEAGE,	330,620
Number of local passengers (including season),	197,510
Number of through passengers (to and from other roads),	98,755
TOTAL NUMBER OF PASSENGERS CARRIED,	296,265
Local passenger mileage (local passengers carried one mile),	3,197,482
Through passenger mileage (through passengers carried one mile),	1,598,741
TOTAL PASSENGER MILEAGE,	4,796,223
Number tons local freight,	62,553
Number tons through freight (to and from other roads),	83,404
TOTAL NUMBER TONS FREIGHT CARRIED,	145,957
Local freight mileage (tons local freight carried one mile),	1,423,958
Through freight mileage (tons through freight carried one mile),	5,695,832
TOTAL FREIGHT MILEAGE,	7,119,790
Average number of persons employed,	190

DESCRIPTION OF ROAD.

Total road leased by this company (Stockbridge & Pittsfield Railroad, 22.93 miles; Berkshire Railroad, 21.03 miles; West Stockbridge Railroad, 2.64 miles).

Sidings and other tracks not above enumerated (Stockbridge & Pittsfield Railroad, 4.99 miles; Berkshire Railroad, 4.49 miles; West Stockbridge Railroad, 2.38 miles).

Same in Massachusetts (Stockbridge & Pittsfield Railroad, 4.99 miles; Berkshire Railroad, 4.49 miles; West Stockbridge Railroad, 2.38 miles).

TOTAL LENGTH OF TRACK, COMPUTED AS SINGLE TRACK (Stockbridge & Pittsfield Railroad, 27.92 miles; Berkshire Railroad, 25.52 miles; West Stockbridge Railroad, 5.02 miles).

Same in Massachusetts (Stockbridge & Pittsfield Railroad, 27.92 miles; Berkshire Railroad, 25.52 miles; West Stockbridge Railroad, 5.02 miles).

Total length of steel rails in tracks, not including steel-top rails (Stockbridge & Pittsfield Railroad, 22.93 miles; Berkshire Railroad, 21.03 miles; West Stockbridge Railroad, 2.64 miles).

[Weights per yard, 60 pounds.]

Roads and Branches belonging to other Companies, operated by this Company under Lease or Contract.	
Stockbridge & Pittsfield, length,	22.93 miles.
Berkshire, length,	21.03 "
West Stockbridge, length,	2.64 "
Total length of above roads,	46.60 "
Total length of above roads in Massachusetts,	46.60 "
Total miles of road operated by this company,	46.60 "
Total miles of road operated by this company in Massachusetts,	46.60 "
Number of stations in Massachusetts on all *roads operated* by this company,	15
Number of telegraph offices in same,	13

List of Accidents.

	From Causes beyond their own Control (in Massachusetts).		From their own Misconduct or Carelessness (in Massachusetts).		Total in Massachusetts.		Total on Whole Road Operated.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	-	-	-	-	-
Employees,	1	2	-	-	1	2	1	2
Others,	3	-	-	-	3	-	3	-

General Information.

Maximum weight of locomotives in working order,	50 tons.
Average weight of locomotives in working order,	36.8 "
Maximum weight of tenders full of fuel and water,	32 "
Average weight of tenders full of fuel and water,	23 "
Maximum weight of passenger-cars,	25 "
Average weight of passenger-cars,	20 "
Average weight of mail and baggage cars,	20 "
Average weight of 8-wheel box freight-cars,	9 "
Average weight of 8-wheel platform-cars,	8 "
Length of heaviest engine and tender, from centre of forward truck-wheel of engine to centre of rear wheel of tender,	48 feet.
Total length of heaviest engine and tender over all,	56 "

Bridges.

Number of trestle bridges of 25 feet length and upwards (Stockbridge & Pittsfield, 7; Stockbridge 8; West Stockbridge, 3),	18
Number of spans of iron bridges of 25 feet and upwards (Stockbridge & Pittsfield, 5; Stockbridge, 1),	6
Number of crossings of highways at grade (Stockbridge & Pittsfield, 22; Stockbridge, 27; West Stockbridge, 4),	53
Number of crossings of highways over railroad,	3
Number of crossings of highways under railroad,	6
Number of highway bridges less than 18 feet above track,	3
Height of lowest bridge above the rail,	14½ feet.
Number of crossings at which gates or flagmen are maintained,	1
Number of crossings at which there are neither signals nor flagmen,	52

Rates of Fare, etc.	
Average rate of fare per mile (not including season tickets) for local passengers on roads operated by this company,	2.66 cents.
Average rate of fare per mile *received* from passengers to and from other roads,	2.19 "
Average rate of fare per mile *received* from *all* passengers,	2.48 "
Average rate of local freight per ton per mile,	4.64 "
Average rate of freight per ton per mile *received* from freight to and from other roads,	1.54 "
Average rate of freight per ton per mile *received* from *all* freight,	2.44 "

Name and Residence of Officers.

W. H. Starbuck, *President*, 36 Wall Street, New York. W. H. Stevenson, *Vice-President and General Manager*, Bridgeport, Conn. R. J. Bestor, *Auditor*, Bridgeport, Conn. W. K. Lyon, *Superintendent*, Bridgeport, Conn. H. C. Cogswell, *General Freight Agent*, Bridgeport, Conn. A. W. Perrin, *General Passenger Agent*, Bridgeport, Conn. M. E. Stone, *Treasurer*, 36 Wall Street, New York.

Name and Residence of Directors last Elected.

W. H. Starbuck, 36 Wall Street, New York. W. H. Stevenson, Bridgeport, Conn. J. L. Macaulay, 36 Wall Street, New York. Thos. Rutter, New York. Henry Hentz, New York. W. H. Barnum, Lime Rock, Conn. A. B. Mygatt, New Milford, Conn. S. E. Merwin, New Haven, Conn. W. E. Downes, Birmingham, Conn.

Proper Address of the Company.

THE HOUSATONIC RAILROAD COMPANY,
Bridgeport, Conn.

W. H. STARBUCK,
J. L. MACAULAY,
WM. H. STEVENSON,
Directors.
M. E. STONE,
Treasurer.

State of New York.

New York City and County, ss. Nov. 26, 1888. Then personally appeared W. H. Starbuck, J. L. Macaulay, Wm. H. Stevenson, directors, and M. E. Stone, treasurer, of the Housatonic Railroad Company of Connecticut, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JNO. A. HILLERY,
A Commissioner for the Commonwealth of Massachusetts, at No. 56 Wall Street, New York City.

REPORT

OF THE

CAPE COD SHIP CANAL COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

To the Board of Railroad Commissioners of the Commonwealth of Massachusetts.

The Cape Cod Ship Canal Company respectfully submits the following report, for the year ending Sept. 30, 1888:—

The construction of the canal has steadily progressed during the year. The work is being done under the contract referred to in the previous annual reports to the Board.

The disbursements for construction have been made by the contractor, and do not appear upon the books of the company.

The corporation has received from the contractor, pursuant to the contract above referred to, the sum of $6,099.08, which sum has been expended as follows:—

On account of right of way,	$220 00
On account of salaries,	2,787 50
On account of legal expenses,	2,375 00
Rent and care of offices,	307 88
Stenographic reports,	94 00
On account of taxes,	314 70
Total,	$6,099 08

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

W. A. Clark, Jr., Lynn, Mass. Sam'l Fessenden, Sandwich, Mass. William A. French, Boston, Mass. Edwin Reed, Cambridge, Mass. Sidney Dillon, New York, N. Y. Thomas Rutter, New York, N. Y. Chas. C. Dodge, New York, N. Y.

OFFICERS OF THE COMPANY.

W. A. Clark, Jr., *President.* Sam'l Fessenden, *Treasurer.* W. Howland, *Clerk.*

PROPER ADDRESS OF THE COMPANY.

CAPE COD SHIP CANAL COMPANY,
SANDWICH, MASS.

W. A. CLARK, JR.,
SAM'L FESSENDEN,
WM. A. FRENCH,
CHARLES C. DODGE,
Directors.
SAM'L FESSENDEN,
Treasurer.

STATE OF NEW YORK.

CITY AND COUNTY OF NEW YORK, ss. On this sixteenth day of November, 1888, personally appeared before me Charles C. Dodge, known to me to be person described in, and who being by me duly sworn, did depose and say that the facts set forth in this report were true, to the best of his knowledge and belief.

RICHARD C. SHIMEALL,
[Certificate filed in New York County.] *Notary Public for Kings County.*

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 17, 1888. Then personally appeared the within-named W. A. Clark, Jr., Sam'l Fessenden and William A. French, and severally made oath that the within statements by them subscribed are true. Before me,

WILLARD HOWLAND,
Notary Public.

STREET RAILWAY RETURNS.

REPORT

OF THE

ALBANY STREET FREIGHT RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[Used only for the transportation of freight.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$75,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock paid (par value of shares, $100),		$50,000 00
Number of stockholders,	8	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$49,066 29
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		49,066 29
Cash assets,		961 32
TOTAL PROPERTY AND ASSETS OF COMPANY,		50,027 61
REVENUE FOR THE YEAR.		
TOTAL EARNINGS (transportation of freight),		$2,252 00
TOTAL INCOME FROM ALL SOURCES,		2,252 00
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$388 61
Wages and salaries of president, treasurer, superintendent and their clerks,		150 00
Taxes, State and local,		171 78
Office expenses, and all other expenses not included above,		1,469 50
TOTAL EXPENSES OF OPERATING,		$2,179 89
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$72 11
Balance for the year, or surplus,		72 11
Deficit at commencement of year,		44 50
TOTAL SURPLUS SEPT. 30, 1888,		27 61

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$49,066 29
Cash and cash assets,	961 32
TOTAL ASSETS,	$50,027 61
LIABILITIES.	
Capital stock,	$50,000 00
Surplus,	27 61
TOTAL LIABILITIES,	$50,027 61

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.	
Dr.	
To balance Sept. 30, 1887,	$44 50
expenses,	2,179 89
Balance carried forward Sept. 30, 1887,	27 61
	$2,252 00
Cr.	
By total income,	$2,252 00
	$2,252 00

Description of Railway.		
Length of railway owned by company, measured as a single track, exclusive of sidings,	.856	mile.
Aggregate length of switches, sidings, etc.,	.076	"
Total length of track, measured as single track,	.932	"
Total length of track paved,	.932	"
Weight of rail per yard, and description of rail: 90 pounds, wrought.		
Description of the several lines or routes operated by the company:		
On Albany Street from Brookline to Lehigh Streets.		
On Lehigh Street to yard of Boston & Albany Railroad.		
Total length of railway measured as single track, not including sidings, etc., operated by this company,	.856	"

Proper Address of the Company.

ALBANY STREET FREIGHT RAILWAY COMPANY,
439 Albany Street, Boston, Mass.

Name and Residence of Officers.

Charles L. Peirson, *President*, Boston, Mass. Thomas S. Hews, *Superintendent*, Boston, Mass. George F. Child, *Treasurer and Clerk of Corporation*, Hingham, Mass.

Name and Residence of Directors last Elected.

Greeley S. Curtis, Boston, Mass. Robert H. Stevenson, Boston, Mass. Charles L. Peirson, Boston, Mass. Henry L. Higginson, Boston, Mass. George F. Child, Hingham, Mass.

CHARLES L. PEIRSON,
GEO. F. CHILD,
GREELEY S. CURTIS,
Directors.

GEO. F. CHILD,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 22, 1888. Then personally appeared Chas. L. Peirson and Greeley S. Curtis, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

GEO. F. CHILD,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 22, 1888. Personally appeared Geo. F. Child, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief. Before me,

CHARLES L. PEIRSON,
Justice of the Peace.

REPORT

OF THE

ARLINGTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road was leased to and operated by the Cambridge Railroad Company until Nov. 19, 1887, when it became consolidated with it, and through the Cambridge became a part of the West End Street Railway.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter, . .	$50,000 00	
Capital stock authorized by votes of company,	25,000 00	
Capital stock paid (par value of shares, $50), . . .		$25,000 00
Number of stockholders, ...	10	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION, ...		$25,000 00
TOTAL PROPERTY AND ASSETS OF COMPANY, . . .		25,000 00
General Balance Sheet Sept. 30, 1888.		
ASSETS.		
Construction, ...		$25,000 00
TOTAL ASSETS, ...		$25,000 00
LIABILITIES.		
Capital stock, ...		$25,000 00
TOTAL LIABILITIES, ...		$25,000 00
DESCRIPTION OF RAILWAY.		
Length of railway owned by company, measured as a single track, exclusive of sidings, ...		1.576 miles.
Total length of track, measured as single track, . . .		1.576 "

PROPER ADDRESS OF THE COMPANY.

ARLINGTON HORSE RAILROAD COMPANY,

CAMBRIDGE, MASS.

NAME AND RESIDENCE OF OFFICERS.

Prentiss Cummings, *President*, Brookline, Mass. Wm. A. Bancroft, *Superintendent*, Cambridge, Mass. Joseph H. Tyler, *Treasurer and Clerk of Corporation*, Winchester, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Prentiss Cummings, Brookline, Mass. Joseph H. Tyler, Winchester, Mass. Henry F. Woods, Somerville, Mass. Edmund Reardon, Cambridge, Mass. Edwin Dresser, Cambridge, Mass.

PRENTISS CUMMINGS,
EDMUND REARDON,
HENRY F. WOODS,
JOS. H. TYLER,
Directors.

JOS. H. TYLER,
Treasurer.

WM. A. BANCROFT,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 15, 1888. Then personally appeared said Edmund Reardon, Henry F. Woods, Joseph H. Tyler and Wm. A. Bancroft, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

PRENTISS CUMMINGS,
Justice of the Peace.

REPORT

OF THE

BROCKTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$150,000 00	
Capital stock authorized by votes of company,	150,000 00	
Capital stock paid (par value of shares, $100),		$150,000 00
Number of stockholders,	73	
DEBT.		
Funded debt as follows:		$100,000 00
Bonds due April 1, 1905, rate of interest 4½ per cent.,	$50,000 00	
Bonds due April 1, 1906, rate of interest 4½ per cent.,	50,000 00	
Unfunded debt as follows:		11,124 68
Notes payable,	$5,000 00	
Unpaid coupons,	2,295 00	
Sundry accounts,	3,829 68	
TOTAL GROSS DEBT,		$111,124 68
Amount of cash assets, viz.:		7,553 23
Cash,	$4,312 76	
Supplies,	2,654 91	
Debit balances,	585 56	
NET DEBT,		$103,571 45
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$170,570 58
EQUIPMENT.		
Horses,		$19,787 50
Cars,		23,297 47
Other articles of equipment,		8,367 36
TOTAL COST OF EQUIPMENT,		$51,452 33
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,	$36,809 71	
TOTAL COST OF LAND AND BUILDINGS,		$36,809 71
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		258,832 62
Cash assets,		7,553 23
TOTAL PROPERTY AND ASSETS OF COMPANY,		$266,385 85

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (new granite paving, drains, etc.),		$1,328 28
New cars (number, 3),		1,851 00
Other equipment,		1,799 44
Land and buildings,		505 03
TOTAL ADDITION TO PROPERTY,		$5,483 75
Property sold or reduced in valuation on the books, viz.:		892 55
Five sets harness sold,	$121 75	
Three sleighs sold,	185 00	
One tip-cart sold,	75 00	
Buildings sold,	510 80	
NET ADDITION TO PROPERTY FOR THE YEAR,		$4,591 20
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$74,100 05
Received from sales of manure,		700 42
TOTAL EARNINGS,		$74,800 47
Income from other sources:		594 86
Advertising in the cars,	$312 50	
Rents,	282 36	
TOTAL INCOME FROM ALL SOURCES,		$75,395 33
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$296 63
Repairs of cars and other vehicles, harness and horse-shoeing,		2,839 25
Repairs of buildings,		128 48
Renewal of horses,		1,347 50
Wages and salaries of president, treasurer, superintendent and their clerks,		2,765 83
Wages and salaries of all other persons employed in operating the road,		28,303 70
Provender,		14,246 43
Taxes, State and local,		2,400 86
Insurance,		1,193 22
Damages for injuries to persons and property,		178 00
Office expenses, and all other expenses not included above,		1,615 07
TOTAL EXPENSES OF OPERATING,		$55,314 97
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$20,080 36
Interest accrued during the year,		4,808 77
Dividends declared, 3 per cent. for the year,		4,500 00
Balance for the year, or surplus,		10,771 59
Deficit at commencement of year,		5,510 42
TOTAL SURPLUS SEPT. 30, 1888,		$5,261 17
INVENTORY OF EQUIPMENT SEPTEMBER 30, 1888.		
Box cars,		18
Open cars,		17
Horses,		141
Harnesses (pairs of),		29
Other articles of equipment:		
Three snow-ploughs, 2 snow-levellers, 1 sand-car, 6 sets track scrapers, 1 tip-cart, 1 grain or hay wagon, 1 Con-		

cord wagon, 1 top buggy, 2 sets team harness, 1 set carriage harness, collars, blankets, surcingles, halters, car-poles, eveners, lead bars, stable tools, track tools, office furniture, etc.	
Largest number of horses owned at any time during the year,	142
Smallest number of horses owned at any time during the year,	138
Average number of horses owned during the year,	140

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$170,570 58
Equipment,	51,452 33
Land and buildings,	36,809 71
Cash and cash assets,	7,553 23
TOTAL ASSETS,	$266,385 85

LIABILITIES.

Capital stock,	$150,000 00
Funded debt,	100,000 00
Unfunded debt,	11,124 68
Surplus,	5,261 17
TOTAL LIABILITIES,	$266,385 85

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To balance Sept. 30, 1887,	$5,510 42
expenses,	55,314 97
interest,	4,808 77
dividends,	4,500 00
Balance carried forward Sept. 30, 1888,	5,261 17
	$75,395 33

CR.

By total income,	$75,395 33
	$75,395 33

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	10.566 miles.
Aggregate length of switches, sidings, etc.,	.896 "
Total length of track, measured as single track,	11.462 "
Total length of track paved,	11.462 "

Weight of rail per yard, and description of rail: 35 pounds flat.

Description of the several lines or routes operated by the company:

Main Street Line.

Commences on Main Street at West Bridgewater line, running thence northerly through Main Street to the Avon line, thence northerly on West Main Street and Main Street to the Randolph line.

Belmont and Pleasant Street Line. Commences on Belmont Street at West Street, thence easterly (double track) to Main Street, from Main Street (single track) to School, Lincoln and Montello, up Centre to Main Street, thence westerly on Pleasant Street to West Street.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . . .	10.566 miles.
MILES RUN, ETC.	
Total number of miles run during the year, ...	307,889
Total number of passengers carried in the cars, . . .	1,590,383
Total number of round trips for the year, ...	24,631
Number of persons regularly employed by company, . .	55
Rates of fare, ...	5 cents.

PROPER ADDRESS OF THE COMPANY.

BROCKTON STREET RAILWAY COMPANY,
BROCKTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

W. W. Cross, *President*, Brockton, Mass. Horace B. Rogers, *Superintendent*, Campello, Mass. C. R. Fillebrown, *Treasurer*, Brockton, Mass. C. W. Sumner, *Clerk of Corporation*, Brockton, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

W. W. Cross, Brockton, Mass. Asa P. Potter, Cohasset, Mass. Thomas Dana, Boston, Mass. H. W. Robinson, Brockton, Mass. C. W. Sumner, Brockton, Mass.

W. W. CROSS,
ASA P. POTTER,
THOMAS DANA,
H. W. ROBINSON,
Directors.

C. R. FILLEBROWN,
Treasurer.

HORACE B. ROGERS,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

PLYMOUTH, ss. BROCKTON, Oct. 30, 1888. Then personally appeared W. W. Cross, Asa P. Potter, Thomas Dana, H. W. Robinson, C. R. Fillebrown and Horace B. Rogers, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHARLES W. SUMNER,
Justice of the Peace.

REPORT

OF THE

BLACK ROCKS & SALISBURY BEACH STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$45,000 00	
Capital stock authorized by votes of company,	45,000 00	
Capital stock paid (par value of shares, $100),		$45,000 00
Number of stockholders,	7	
DEBT.		
Unfunded debt as follows:		$5,002 20
Notes and bills outstanding,	$5,002 20	
TOTAL GROSS DEBT,		$5,002 20
Amount of cash assets, viz.:		
Cash,		5,542 35
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving,	$3,081 86	
Track, including timber, rails, etc., and laying,	26,524 03	
Interest during construction, commissions, discounts, etc.,	270 72	
Engineering, agencies, salaries, and other expenses during construction,	1,099 14	
TOTAL COST OF CONSTRUCTION,		$30,975 75
EQUIPMENT.		
Horses,		$586 00
Cars,		6,144 69
Other articles of equipment,		184 80
TOTAL COST OF EQUIPMENT,		$6,915 49
LAND AND BUILDINGS.		
Land and wharf owned by company needed in operating road,		$8,580 96
Buildings owned by company needed in operating road,		3,530 00
TOTAL COST OF LAND AND BUILDINGS,		$12,110 96
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$50,002 20
Cash assets,		5,542 35
TOTAL PROPERTY AND ASSETS OF COMPANY,		$55,544 55
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 22,256),		$25,109 42
New horses (number, 17),		2,474 00

New cars (number, 6),		$3,150 00
Other equipment (motor),		779 49
Land and buildings,		11,730 96
TOTAL ADDITION TO PROPERTY,		$43,243 87
Property sold or reduced in valuation on the books, viz.:		1,888 00
12 horses sold,	$1,580 00	
1 horse died,	161 00	
Loss on horses,	147 00	
NET ADDITION TO PROPERTY FOR THE YEAR,		$41,355 87
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$9,110 31
TOTAL EARNINGS,		$9,110 31
Income from other sources:		875 00
Rents,	$475 00	
Wharf,	400 00	
TOTAL INCOME FROM ALL SOURCES,		$9,985 31
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of cars and other vehicles, harness and horse-shoeing,		$1,014 76
Wages and salaries of president, treasurer, superintendent and their clerks,		880 40
Wages and salaries of all other persons employed in operating the road,		1,946 76
Provender ($291.30; water, $145.00; coal, $143.39),		579 70
Taxes, State and local,		4 31
Office expenses, and all other expenses not included above,		897 43
TOTAL EXPENSES OF OPERATING,		$5,323 36
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$4,661 95
Dividends declared (10 per cent.) for the year,*		900 00
Balance for the year, or surplus,		3,761 95
Surplus at commencement of year,		1,780 40
TOTAL SURPLUS SEPT. 30, 1888,		5,542 35
INVENTORY OF EQUIPMENT SEPTEMBER 30, 1888.		
Box cars,		2
Open cars,		9
Horses,		4
Harnesses (pairs of),		7
Other articles of equipment: Dummy-engine motor,		1
Largest number of horses owned at any time during the year,		14
Average number of horses owned during the year,		10

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$30,975 75
Equipment,	6,915 49
Land and buildings,	12,110 96
Cash and cash assets,	5,542 35
TOTAL ASSETS,	$55,544 55

* On $9,000 capital stock.

Liabilities.	
Capital stock,	$45,000 00
Funded debt,	5,002 20
Surplus,	5,542 35
Total Liabilities,	$55,544 55

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$5,323 36
dividends,	900 00
Balance carried forward Sept. 30, 1888,	5,542 35
	$11,765 71

Cr.	
By balance Sept. 30, 1887,	$1,780 40
total income,	9,985 31
	$11,765 71

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	5.854 miles.
Aggregate length of switches, sidings, etc.,	.140 "
Total length of track, measured as single track,	5.994 "
Total length of track paved,	.800 "
Weight of rail per yard, and description of rail: 35 pounds, T.	
Description of the several lines or routes operated by the company: Extending from the Merrimac River, in the town of Salisbury, to the New Hampshire line, and from Salisbury Beach to the depot of the Boston & Maine Railroad, in the town of Salisbury.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	5.854 "

Miles Run, etc.	
Total number of miles run during the year,	11,380
Total number of passengers carried in the cars,	113,890
Total number of round trips for the year,	2,400
Number of persons regularly employed by company,	11
Rates of fare,	5, 7½ & 10 cts.

Proper Address of the Company.

BLACK ROCKS & SALISBURY BEACH STREET RAILWAY COMPANY,
Newburyport, Mass.

Name and Residence of Officers.

Edward P. Shaw, *President and Superintendent*, Newburyport, Mass.
George Tilton, *Treasurer and Clerk of Corporation*, Newburyport, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Edward P. Shaw, Newburyport, Mass. David B. Sanborn, Salisbury, Mass. J. Frank Tilton, Amesbury, Mass. George Tilton, Newburyport, Mass. A. P. Shaw, Newburyport, Mass.

EDWARD P. SHAW,
J. FRANK TILTON,
GEORGE TILTON,
Directors.

GEORGE TILTON,
Treasurer.

EDWARD P. SHAW,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. NEWBURYPORT, MASS., Nov. 5, 1888. Then personally appeared Edward P. Shaw, J. Frank Tilton and George Tilton, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WILLIAM F. HOUSTON,
Justice of the Peace

REPORT

OF THE

BOSTON & CHELSEA RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to the West End Street Railway Company, and operated by the Lynn & Boston Railroad Company.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter, . .	$300,000 00	
Capital stock authorized by votes of company,	121,000 00	
Capital stock paid (par value of shares, $50), . . .		$121,000 00
Number of stockholders, ...	95	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION, ...		$121,000 00
TOTAL PROPERTY AND ASSETS OF COMPANY, . . .		121,000 00
REVENUE FOR THE YEAR.		
Received from other railways as tolls or rent: . . .		$7,260 00
Boston Consolidated Street Railway Company, .	$3,630 00	
West End Street Railway, ...	3,630 00	
TOTAL INCOME FROM ALL SOURCES, ...		7,260 00
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES, .		$7,260 00
Dividends declared (6 per cent.) for the year, . . .		7,260 00

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction, ...	$121,000 00
TOTAL ASSETS, ...	$121,000 00
LIABILITIES.	
Capital stock, ...	$121,000 00
TOTAL LIABILITIES, ...	$121,000 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.	
To dividends, ...	$7,260 00
	$7,260 00

Cr.	
By total income,	$7,260 00
	$7,260 00

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	4.116 miles.
Aggregate length of switches, sidings, etc.,	.038 "
Total length of track, measured as single track,	4.154 "

Proper Address of the Company.

BOSTON & CHELSEA RAILROAD COMPANY,
81 Milk Street, Room 42,
Boston, Mass.

Name and Residence of Officers.

W. W. Wheildon, *President*, Concord, Mass. John H. Studley, Jr., *Treasurer and Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors last Elected.

W. W. Wheildon, Concord, Mass. Wm. G. Wheildon, Concord, Mass. George M. Brooks, Concord, Mass. R. E. Demmon, Boston, Mass. T. Quincy Browne, Boston, Mass. Chas. E. Powers, Boston, Mass. Benj. H. Dewing, Revere, Mass.

WM. W. WHEILDON,
W. G. WHEILDON,
GEORGE M. BROOKS,
T. QUINCY BROWNE,
CHAS. E. POWERS,
R. E. DEMMON,
Directors.

JOHN H. STUDLEY, Jr.,
Treasurer.

Commonwealth of Massachusetts.

Suffolk, ss. Nov. 2, 1888. Then personally appeared Wm. G. Wheildon, George M. Brooks, T. Quincy Browne, Reuben E. Demmon, John H. Studley, Jr., and Benj. H. Dewing, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

EDWD. O. SHEPARD,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Oct. 25, 1888. Then personally appeared said Wm. W. Wheildon and made oath to the truth of the foregoing statement by him subscribed, to his best knowledge and belief.

Before me,

PRENTISS CUMMINGS,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 1, 1888. Then personally appeared said Charles E. Powers and made oath to the truth of the foregoing statement by him subscribed, to his best knowledge and belief.

Before me,

MELVILLE P. BECKETT,
Justice of the Peace.

REPORT

OF THE

BOSTON CONSOLIDATED STREET RAILWAY COMPANY,

FOR THE PERIOD ENDING NOVEMBER 12, 1887.

[This company was consolidated with the West End Street Railway Company Nov. 12, 1887, under the authority of chapter 413 of the Acts of 1887.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$2,000,000 00	
Capital stock authorized by votes of company,	1,700,000 00	
Capital stock paid (par value of shares, $100),		$1,700,000 00
DEBT.		
Funded debt, as follows:		$1,300,000 00
Bonds due 1897, rate of interest 6 per cent.,	$200,000 00	
Bonds due 1898, rate of interest 6 per cent.,	100,000 00	
Bonds due 1902, rate of interest 5 per cent.,	300,000 00	
Bonds due 1904, rate of interest 5 per cent.,	200,000 00	
Bonds due 1907, rate of interest 5 per cent.,	500,000 00	
Unfunded debt, as follows:		479,667 76
Notes payable,	$404,554 01	
Sundry accounts,	75,113 75	
TOTAL GROSS DEBT,		$1,779,667 79
Amount of cash assets, viz.:		610,971 36
Cash and bonds,	$212,802 70	
Debit balances,	398,168 69	
NET DEBT,		$1,168,696 37
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$1,206,701 66
EQUIPMENT.		
Horses,		$285,555 00
Cars,		359,392 55
Other articles of equipment,		119,527 93
TOTAL COST OF EQUIPMENT,		$764,475 48

Land and Buildings.		
Land owned by company needed in operating road,		$460,826 29
Buildings owned by company needed in operating road,		422,429 44
Total Cost of Land and Buildings,		$883,255 73
Other Property.		
Land and buildings, Tremont Street,	$50,000 00	
Land and buildings, Grove Hall,	40,000 00	
Land and buildings, Malden,	12,000 00	
Land and buildings, Medford,	9,963 90	
		$111,963 90
Total Amount of Permanent Investments,		$2,966,396 77
Cash assets,		610,971 39
Total Property and Assets of Company,		$3,577,368 16
Property Accounts: Charges and Credits during the Period.		
Extension of tracks,		$49,568 89
Other equipment,		1,703 33
Land and buildings,		431 70
Total Addition to Property,		$51,703 92
Revenue to Nov. 12, 1887.		
Received from passengers on railways operated by this company,		$134,320 42
Received from other railways as tolls or rent,		453 70
Income from other sources:		380 77
Rents,	$130 77	
Advertising,	250 00	
Total Income from all Sources,		$135,154 89
Expenses of Operating the Railway to Nov. 12, 1887.		
Repairs of road-bed and track,		$34,745 23
Repairs of cars and other vehicles, harness and horse-shoeing,		39,136 29
Repairs of buildings,		245 22
Wages and salaries of president, treasurer, superintendent and their clerks, and wages and salaries of all other persons employed in operating the road,		69,333 31
Provender,		56,968 98
Taxes, State and local,		1,063 09
Insurance,		1,937 54
Office expenses, and all other expenses not included above,		10,770 83
Total Expenses of Operating,*		$214,200 49
Net Income, Dividends, etc.		
Total Net Deficit above Operating Expenses,		$79,045 60
Interest accrued during the year,		10,692 17
Balance for the year, or deficit,		89,737 77
Surplus at commencement of year,		187,438 17
Total Surplus Nov. 12, 1887,		97,700 40

* Under the system of keeping accounts, operating expenses were charged October 1 with the amount of materials on hand at that date, $109,905.33; therefore the operating expenses to November 12, as shown above, are too large by the amount of materials and supplies actually on hand at that date.

General Balance Sheet Nov. 12, 1887.

ASSETS.

Construction,	$1,206,701 66
Equipment,	764,475 48
Land and buildings,	883,255 73
Other property,	111,963 90
Cash and cash assets,	610,971 39
TOTAL ASSETS,	$3,577,368 16

LIABILITIES.

Capital stock,	$1,700,000 00
Funded debt,	1,300,000 00
Unfunded debt,	479,667 76
Surplus,	97,700 40
TOTAL LIABILITIES,	$3,577,368 16

General Balance Sheet as changed by Subsequent Entries made in Profit and Loss Account to adjust Accounts, with Inventories and Entries made as of Date of Transfer to the West End Street Railway Company.

ASSETS.

Construction,	$1,206,701 66
Horses,	275,158 52
Cars,	346,642 55
Equipment,	119,527 93
Lands and buildings,	883,255 73
Other property,	111,963 90
Cash and cash assets,	428,333 95
Deficit,	170,103 61
TOTAL ASSETS,	$3,541,687 85

LIABILITIES.

Capital stock,	$1,700,000 00
Funded debt,	1,300,000 00
Unfunded debt,	479,667 76
Bills and accounts outstanding Nov. 12, 1887, less value of materials found to be on hand,	62,020 09
TOTAL LIABILITIES,	$3,541,687 85

Copy of Profit and Loss Account to Nov. 12, 1887.

DR.

To expenses,	$214,200 49
interest,	10,692 17
balance carried forward,	97,700 40
	$322,593 06

CR.

By balance Sept. 30, 1887,	$187,438 17
total income,	135,154 89
	$322,593 06

Subsequent Entries made to adjust Accounts, with Inventories and Entries made as of Date of Transfer to the West End Street Railway Company.	
Dr.	
To 15 box cars, condemned as worthless,	$12,750 00
reduction in value of horses as shown on the books, to correspond with inventory value of same,	10,396 48
uncollectible accounts,	182,637 44
outstanding bills, unsettled claims, accrued interest and taxes, not entered upon the books at date of transfer, less value of materials found to be on hand,	62,020 09
	$267,804 01
Cr.	
By balance Nov. 12, 1887,	$97,700 40
Balance carried forward,	170,103 61
	$267,804 01

Miles Run, etc., to Nov. 12, 1887.	
Total number of miles run,	427,835
Total number of passengers carried in the cars,	2,891,648
Total number of round trips,	50,178
Number of persons regularly employed by company,	960
Rates of fare,	10, 8 & 5 cents.

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	–	2	–	–	–	2
Employees,	–	–	–	–	–	–
Others,	–	–	–	–	–	–

Statement of Each Accident.

Oct. 12, 1887. — Man fell, getting off car.

November 11. — Woman fell, getting off car.

Proper Address of the Company.

BOSTON CONSOLIDATED STREET RAILWAY COMPANY,

81 Milk Street, Boston, Mass.

Name and Residence of Officers.

Jarvis D. Braman, *President*, Boston, Mass. Grenville D. Braman, *Treasurer*, Boston, Mass. Elmer P. Howe, *Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Jarvis D. Braman, Boston, Mass. G. T. W. Braman, Cohasset, Mass. Grenville D. Braman, Cohasset, Mass. M. F. Dickinson, Jr., Boston, Mass. Elmer P. Howe, Boston, Mass. Henry D. Hyde, Boston, Mass. N. W. Jordan, Boston, Mass. Henry M. Whitney, Brookline, Mass. W. A. Sargent, Boston, Mass. J. W. Work, Boston, Mass. Asa P. Potter, Cohasset, Mass.

ELMER P. HOWE,
HENRY M. WHITNEY,
GRENVILLE D. BRAMAN,
ASA P. POTTER,
G. T. W. BRAMAN,
HENRY D. HYDE,
Directors.

GRENVILLE D. BRAMAN,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 14, 1888. Then personally appeared said Elmer P. Howe, Henry M. Whitney, Grenville D. Braman, Asa P. Potter, G. T. W. Braman and Henry D. Hyde, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

PRENTISS CUMMINGS,
Justice of the Peace.

REPORT

OF THE

CAMBRIDGE STREET RAILWAY COMPANY,

FOR THE PERIOD ENDING NOVEMBER 19, 1887.

[This company was consolidated with the West End Street Railway Company Nov. 19, 1887, under the authority of chapter 413 of the Acts of 1887.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter and Act of Legislature,	$1,975,000 00	
Capital stock authorized by votes of company,	1,975,000 00	
Capital stock paid (par value of shares, $100),		$1,975,000 00
DEBT.		
Funded debt, as follows:		$750,000 00
Mortgage bonds due 1903, rate of interest 5 per cent.,	$600,000 00	
Mortgage bonds due 1904, rate of interest 5 per cent.,	150,000 00	
Unfunded debt, as follows:		16,738 80
Accounts payable,	$16,738 80	
TOTAL GROSS DEBT,		$766,738 80
Amount of cash assets, viz.:		15,940 74
Cash,	$401 66	
Supplies,	11,796 04	
Debit balances,	3,743 04	
NET DEBT,		$750,798 06
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$1,399,387 31
EQUIPMENT.		
Horses,		$233,100 00
Cars,		292,193 00
Other articles of equipment,		105,729 57
TOTAL COST OF EQUIPMENT,		$631,022 57
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$324,227 40
Buildings owned by company needed in operating road,		402,460 81
TOTAL COST OF LAND AND BUILDINGS,		$726,688 21

OTHER PROPERTY.		
Cambridge Railroad Company's stock,		$25,000 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$2,782,098 09
Cash assets,		15,940 74
TOTAL PROPERTY AND ASSETS OF COMPANY,		$2,798,038 83
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE PERIOD.		
Extension of tracks (Arlington Railroad, 1.576 miles),		$25,000 00
TOTAL ADDITION TO PROPERTY,		25,000 00
Property sold or reduced in valuation on the books, viz.:		
Horses sold,		2,660 00
NET ADDITION TO PROPERTY FOR THE PERIOD,		22,340 00
REVENUE TO NOV. 19, 1887.		
Received from passengers on railways operated by this company,		$119,245 28
Received from sales of manure,		668 82
TOTAL EARNINGS,		$119,914 10
Income from other sources:		683 65
Rents,	$297 40	
Advertising,	221 00	
Barges,	165 25	
TOTAL INCOME FROM ALL SOURCES,		$120,597 75
EXPENSES OF OPERATING THE RAILWAY.		
Repairs of road-bed and track,		$9,090 57
Repairs of cars and other vehicles, harness and horse-shoeing,		15,521 79
Repairs of buildings,		4,647 04
Renewal of horses,		2,338 00
Wages and salaries of president, treasurer, superintendent and their clerks,		2,627 72
Wages and salaries of all other persons employed in operating the road,		33,283 54
Provender,		24,891 85
Taxes, State and local,		122 89
Rent and tolls paid other companies for use of their roads,		578 56
Insurance,		11,402 27
Damages for injuries to persons and property,		4,818 65
Office expenses, and all other expenses not included above,		2,307 72
TOTAL EXPENSES OF OPERATING,		$111,630 60
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$8,967 15
Balance for the year, or surplus,		8,967 15
Surplus at commencement of year,		47,332 88
TOTAL SURPLUS NOV. 19, 1887,		56,300 03

General Balance Sheet Nov. 19, 1887.

ASSETS.	
Construction,	$1,399,387 31
Equipment,	631,022 57
Land and buildings,	726,688 21
Other property,	25,000 00
Cash and cash assets,	15,940 74
TOTAL ASSETS,	$2,798,038 83

Liabilities.	
Capital stock,	$1,975,000 00
Funded debt,	750,000 00
Unfunded debt,	16,738 80
Surplus,	56,300 03
Total Liabilities,	$2,798,038 83

General Balance Sheet as changed by Subsequent Entries made in Profit and Loss Account to adjust Accounts, with Inventories and Entries as of Date of Transfer to the West End Street Railway Company.

Assets.	
Construction,	$1,399,387 31
Horses,	211,420 52
Cars,	215,055 50
Equipment,	105,729 57
Land and buildings,	726,688 21
Other property,	25,000 00
Cash and cash assets,	15,940 74
Deficit,	68,938 44
Total Assets,	$2,768,160 29
Liabilities.	
Capital stock,	$1,975,000 00
Funded debt,	750,000 00
Unfunded debt,	16,738 80
Bills outstanding Nov. 19, 1887, less value of materials found to be on hand,	26,421 49
Total Liabilities,	$2,768,160 29

Copy of Profit and Loss Account to Nov. 19, 1887.

Dr.	
To expenses,	$111,630 60
Balance Nov. 19, 1887,	56,300 03
	$167,930 63
Cr.	
By balance Sept, 30, 1887,	$47,332 88
total income,	120,597 75
	$167,930 63

Subsequent Entries made to adjust Accounts, with Inventories as of Date of Transfer to the West End Street Railway Company.

Dr.	
To 90 box cars and 1 open car condemned as worthless,	$77,137 50
reduction in value of horses as shown on the books, to correspond with inventory value of same,	21,679 48
outstanding bills, unsettled claims, and accrued interest and taxes, not entered on the books at the date of transfer, less materials found to be on hand,	26,421 49
	$125,238 47
Cr.	
By balance brought down,	$56,300 03
Balance carried forward, as of Nov. 19, 1887,	68,938 44
	$125,238 47

Miles Run, etc., to Nov. 19, 1887.	
Total number of miles run during the year,	380,939
Total number of passengers carried in the cars,	2,376,376
Total number of round trips for the year,	45,398
Number of persons regularly employed by company,	600
Rates of fare,	5 & 10 cents,

List of Accidents.

	From causes beyond their own control.		From their own misconduct or carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	–	1	–	1	–	2
Employees,	–	–	–	–	–	–
Others,	–	2	–	1	–	3

Statement of Each Accident.

Oct. 1, 1887. — Man fell off car and run over.
October 7. — Man thrown from wagon by collision.
October 7. — Woman fell over valise in car.
October 26. — Man knocked down by car.
November 10. — Woman knocked down by horse near car.

Proper Address of the Company.

CAMBRIDGE RAILROAD COMPANY,
81 Milk Street, Boston, Mass.

Name and Residence of Officers.

Jarvis D. Braman, *President*, Boston, Mass. Grenville D. Braman, *Treasurer*, Cohasset, Mass. Elmer P. Howe, *Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors last Elected.

Jarvis D. Braman, Boston, Mass. G. T. W. Braman, Cohasset, Mass. G. D. Braman, Cohasset, Mass. Prentiss Cummings, Brookline, Mass. M. F. Dickinson, Jr., Boston, Mass. E. P. Howe, Boston, Mass. Henry D. Hyde, Boston, Mass. N. W. Jordan, Boston, Mass. Asa P. Potter, Cohasset, Mass. W. A. Sargent, Boston, Mass. Henry M. Whitney, Brookline, Mass.

ELMER P. HOWE,
HENRY M. WHITNEY,
GRENVILLE D. BRAMAN,
ASA P. POTTER,
G. T. W. BRAMAN,
PRENTISS CUMMINGS,
HENRY D. HYDE,
Directors.

GRENVILLE D. BRAMAN,
Treasurer.

WM. A. BANCROFT,
Superintendent.

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Nov. 14, 1888. Then personally appeared said Elmer P. Howe, Henry M. Whitney, Grenville D. Braman, Asa P. Potter, G. T. W. Braman, Henry D. Hyde and Wm. A. Bancroft, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

PRENTISS CUMMINGS,
Justice of the Peace.

REPORT

OF THE

EAST MIDDLESEX STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$300,000 00	
Capital stock authorized by votes of company,	200,000 00	
Capital stock paid (par value of shares, $100),		$200,000 00
Number of stockholders,	58	
DEBT.		
Funded debt, as follows:		$125,000 00
Plain bonds due Sept. 1, 1898, rate of interest 6 per cent.	$125,000 00	
Unfunded debt, as follows:		37,833 99
Notes payable,	$33,000 00	
Outstanding tickets,	45 73	
Sundry open accounts,	4,788 26	
TOTAL GROSS DEBT,		$162,833 99
Amount of cash assets, viz.:		12,277 46
Cash,	$3,087 52	
Supplies,	819 24	
Debit balances,	8,370 70	
NET DEBT,		$150,556 53
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$214,800 63	
Engineering, agencies, salaries, and other expenses during construction,	561 48	
TOTAL COST OF CONSTRUCTION,		$215,362 11
EQUIPMENT.		
Horses,		$34,146 70
Cars,		42,824 58
Other articles of equipment,		11,426 61
TOTAL COST OF EQUIPMENT,		$88,397 89

LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$13,664 29
Buildings owned by company needed in operating road,		44,420 52
TOTAL COST OF LAND AND BUILDINGS,		$58,084 81
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$361,844 81
Cash assets,		12,277 46
TOTAL PROPERTY AND ASSETS OF COMPANY,		$374,122 27
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 1221.5),		$2,939 17
New horses (number, 89),		14,708 00
New cars (equipment),		345 48
Other equipment,		5,132 53
Land and buildings,		1,018 04
TOTAL ADDITION TO PROPERTY,		$24,143 22
Property sold or reduced in valuation on the books, viz.:		5,545 89
Horses,	$5,545 89	
NET ADDITION TO PROPERTY FOR THE YEAR,		$18,597 33
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$58,566 95
Received from other railways as tolls or rent:		73 30
West End Street Railway Company,	$73 30	
Received from mails and express,		240 00
Received from sales of manure,		928 42
TOTAL EARNINGS,		$59,808 67
Income from other sources:		538 25
Rents,	$108 67	
Interest,	19 58	
Advertising in cars,	410 00	
TOTAL INCOME FROM ALL SOURCES,		$60,346 92
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$2,591 90
Repairs of cars and other vehicles, harness and horse-shoeing,		3,598 89
Repairs of buildings,		458 02
Renewal of horses,		3,334 71
Wages and salaries of president, treasurer, superintendent and their clerks,		3,549 93
Wages and salaries of all other persons employed in operating the road,		25,397 80
Provender,		13,414 12
Taxes, State and local,		1,886 63
Rent and tolls paid other companies for use of their roads:		656 44
Boston Consolidated Street Railway Company,	$5 66	
West End Street Railway Company,	330 68	
Lynn & Boston Railroad Company,	255 89	
North Woburn Street Railroad Company,	64 21	
Insurance,		1,778 40
Damages for injuries to persons and property,		163 00
Office expenses, and all other expenses not included above,		5,796 25
TOTAL EXPENSES OF OPERATING,		$62,626 09

NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME BELOW OPERATING EXPENSES,		$2,279 17
Interest accrued during the year,		6,284 95
Deficit for the year,		8,564 12
Surplus at commencement of year,	$19,067 24	
Add: —		
Materials, etc., not used,	$160 16	
Premium on bonds sold,	625 00	
Surplus at commencement of year as changed by aforesaid entries,		19,852 40
TOTAL SURPLUS SEPT. 30, 1888,		$11,288 28
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		23
Open cars,		34
Horses,		215
Harnesses (pairs of),		51
Sleighs,		1
Other articles of equipment:		
Five snow-ploughs, 4 levellers, 2 heavy wagons, 3 light wagons, 1 Concord wagon, 1 buggy, 5 sleds, 4 heavy and 2 light harnesses.		
Largest number of horses owned at any time during the year,		218
Smallest number of horses owned at any time during the year,		144
Average number of horses owned during the year,		181

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$215,362 11
Equipment,	88,397 89
Land and buildings,	58,084 81
Cash and cash assets,	12,277 46
TOTAL ASSETS,	$374,122 27
LIABILITIES.	
Capital stock,	$200,000 00
Funded debt,	125,000 00
Unfunded debt,	37,833 99
Surplus,	11,288 28
TOTAL LIABILITIES,	$374,122 27

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.	
To expenses,	$62,626 09
interest,	6,284 95
Balance carried forward Sept. 30, 1888,	11,288 28
	$80,199 32
CR.	
By balance Sept. 30, 1887,	$19,067 24
total income,	60,346 92
materials not used,	160 16
premium on bonds sold,	625 00
	$80,199 32

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	15.1200 miles.
Aggregate length of switches, sidings, etc.,	.8911 "
Total length of track, measured as single track,	16.0111 "
Total length of track paved,	12.4468 "
Weight of rail per yard, and description of rail: 35 pounds T, 35 pounds flat, 35 pounds Richards.	
Description of the several lines or routes operated by the company:	
From Woburn, by way of Main, Salem, Pine, Orange and Central streets, Montvale Avenue and Main Street, to Stoneham Square, thence by way of Franklin, Green and Main streets, through Melrose to Malden Square, thence by way of Ferry and Chelsea streets and Everett Avenue, through Everett to Broadway, Lynn, Chelsea.	
From Western Division, Boston & Maine Depot, Malden, by way of Pleasant, Salem, Beach, Lawrence and Salem streets, in Malden and Revere, and Lincoln Avenue in Saugus, to a junction with Lynn & Boston Railroad at Cliftondale (Saugus).	
From corner Beach and Lawrence streets, in Malden, to Revere Beach.	
Length of railway belonging to other companies, measured as single track, not including sidings, etc., operated by this company, *or over which this company runs its cars*, with the description of same:	4.7415 miles.
From junction of Main and Salem streets, in Woburn, to a point in front of Common in same, on track of the North Woburn Street Railroad Company,	.2085 "
From Western Division Depot, Malden, to a point in front of City Hall in same, on track of West End Street Railway Company,	.3130 "
From junction of Broadway and Revere Street, in Revere, to the beach, on track of Lynn & Boston Railroad Company,	1.1635 "
From junction of Ferry and Walnut streets, in Malden, to the junction of Ferry and Chelsea streets, in Everett, on track of the West End Street Railway Company,	1.7550 "
From junction last named to Broadway Square, in Chelsea, on track of Lynn & Boston Railroad,	1.3015 "
Total length of railway, measured as single track, not including sidings, etc., operated by this company,	19.8615 "
Miles Run, etc.	
Total number of miles run during the year,	212,955
Total number of passengers carried in the cars,	985,525
Total number of round trips for the year,	35,459
Number of persons regularly employed by company,	45
Rates of fare:	
Between Woburn and Melrose Highlands, local, 5 cents. Woburn to Stoneham, 8 cents; Woburn to Stoneham, workingman's, 6 cents; through, 13 cents. Between Melrose Highlands and Chelsea, local, 5 cents; through, 10 cents. Between Melrose and Cliftondale, local, 5 cents; through, 8 cents. Between Malden and Revere Beach, local, 5 cents; through, 10 cents.	

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	–	4	–	–	–	4
Employees, ...	–	–	–	1	–	1

Statement of Each Accident.

April 20, 1888. — Horses attached to car were frightened by noise made by Salvation Army, and, backing violently, jammed a passenger's leg.

August 19. — Car at turnout missed switch, and two cars came together. Two men on front platform claim that they were injured thereby.

August 19. — Conductor in throwing switch had his foot injured.

September 29. — Man fell from front platform of car while rounding a curve. Horses at a walk.

Proper Address of the Company.

EAST MIDDLESEX STREET RAILWAY COMPANY,
35 Congress Street, Boston, Mass.

Name and Residence of Officers.

Amos F. Breed, *President*, Lynn, Mass. Nathan E. Morton, *Superintendent*, Malden, Mass. Frank H. Monks, *Treasurer and Clerk of Corporation*, Brookline, Mass.

Name and Residence of Directors last Elected.

Amos F. Breed, Lynn, Mass. Philip A. Chase, Lynn, Mass. David H. Sweetser, Lynn, Mass. Lyman Dike, Stoneham, Mass. Benj. Hinckley, Woburn, Mass. Elwin C. Foster, Revere, Mass. Frank H. Monks, Brookline, Mass.

AMOS F. BREED,
PHILIP A. CHASE,
LYMAN DIKE,
D. H. SWEETSER,
ELWIN C. FOSTER,
FRANK H. MONKS,
Directors.
FRANK H. MONKS,
Treasurer.
NATHAN E. MORTON,
Superintendent.

Commonwealth of Massachusetts.

Suffolk, ss. Oct. 17, 1888. Then personally appeared Amos F. Breed, Philip A. Chase, Lyman Dike, David H. Sweetser, Elwin C. Foster, Frank H. Monks and Nathan E. Morton, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

GERALD WYMAN,
Justice of the Peace.

REPORT

OF THE

EAST SIDE STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[In process of construction.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$45,000 00	
Capital stock authorized by votes of company,	45,000 00	
Capital stock paid (par value of shares, $100),		$33,590 00
Number of stockholders,	200	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$26,952 90
EQUIPMENT.		
Cars,		$3,383 31
TOTAL COST OF EQUIPMENT,		$3,383 31
LAND AND BUILDINGS.		
Land and buildings owned by company, needed in operating road,		$2,007 22
TOTAL COST OF LAND AND BUILDINGS,		$2,007 22
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$32,343 43
Cash assets,		1,246 57
TOTAL PROPERTY AND ASSETS OF COMPANY,		$33,590 00
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.*		
Extension of tracks,		$26,952 90
New cars (number, 4),		3,383 31
Land and buildings,		2,007 22
TOTAL ADDITION TO PROPERTY,		$32,343,43

* Road in process of construction.

General Balance Sheet Sept. 30, 1888.	
ASSETS.	
Construction,	$26,952 90
Equipment,	3,383 31
Land and buildings,	2,007 22
Cash and cash assets,	1,246 57
TOTAL ASSETS,	$33,590 00
LIABILITIES.	
Capital stock,	$33,590 00
TOTAL LIABILITIES,	$33 590 00

DESCRIPTION OF RAILWAY.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	4.25 miles.
Aggregate length of switches, sidings, etc.,	.25 "
Total length of track paved,	1.00 "
Weight of rail per yard, and description of rail: 40 pounds, T.	
Description of the several lines or routes operated by the company: Crescent Street from Main Street to Quincy, Quincy to Centre, Centre to Cary, Cary to Court, Court to Everett, Everett to Centre, Centre to Montello, Montello to Ward, Ward to Main.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	4.25 miles.

PROPER ADDRESS OF THE COMPANY.

EAST SIDE STREET RAILWAY COMPANY,
BROCKTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

Albert F. Small, *President and Superintendent*, Brockton, Mass. Lester F. Holmes, *Treasurer and Clerk of Corporation*, Brockton, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Albert F. Small, Brockton, Mass. Lester F. Holmes, Brockton, Mass. Ira Copeland, Brockton, Mass. George I. Sylvester, Brockton, Mass. Joseph C. Snow, Brockton, Mass. Everett C. Hall, Brockton, Mass. Wallace C. Flagg, Brockton, Mass.

ALBERT F. SMALL,
LESTER F. HOLMES,
IRA COPELAND,
GEORGE I. SYLVESTER,
EVERETT C. HALL,
WALLACE C. FLAGG,
Directors.

LESTER F. HOLMES,
Treasurer.

ALBERT F. SMALL,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

PLYMOUTH, ss. BROCKTON, Nov. 20, 1888. Then personally appeared Albert F. Small, Lester F. Holmes, Ira Copeland, George I. Sylvester, Everett C. Hall and Wallace C. Flagg, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. D. FULLERTON,
Justice of the Peace.

REPORT

OF THE

EAST WAREHAM, ONSET BAY & POINT INDEPENDENCE STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$8,000 00	
Capital stock authorized by votes of company,	8,000 00	
Capital stock paid (par value of shares, $100),		$8,000 00
Number of stockholders,	46	
DEBT.		
Unfunded debt, as follows:		$4,050 16
Notes payable,	$4,050 16	
Amount of cash assets, viz.:		920 06
Cash,	$920 06	
NET DEBT,		$3,130 10
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$7,969 58	
Engineering, agencies, salaries and other expenses during construction,	478 30	
TOTAL COST OF CONSTRUCTION,		$8,447 88
EQUIPMENT.		
Horses,		$730 00
Cars,		1,330 00
Other articles of equipment,		617 28
TOTAL COST OF EQUIPMENT,		$2,677 28
LAND AND BUILDINGS.		
Land owned by company, needed in operating road,		$25 00
Buildings owned by company, needed in operating road,		900 00
TOTAL COST OF LAND AND BUILDINGS,		$925 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$12,050 16
Cash assets,		920 06
TOTAL PROPERTY AND ASSETS OF COMPANY,		$12,970 22
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$1,972 80
Received from mails and express,		176 02
TOTAL EARNINGS,		$2,148 82

Income from other sources:		$667 03
Stabling, baggage and freight,	$667 03	
TOTAL INCOME FROM ALL SOURCES,		$2,815 85
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of cars and other vehicles, harness and horse-shoeing,		$40 12
Wages and salaries of all other persons employed in operating the road,		954 78
Provender,		582 14
Taxes, State and local,		56 49
Insurance,		37 50
Office expenses, and all other expenses not included above,		224 76
TOTAL EXPENSES OF OPERATING,		$1,895 79
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$920 06
Balance for the year, or surplus,		920 06
TOTAL SURPLUS SEPT. 30, 1888,		920 06
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		2
Open cars,		2
Horses,		7
Harnesses (pairs of),		10
Omnibuses,		1
Other articles of equipment:		
Two express wagons, 1 farm wagon, 1 tip-cart, 1 lumber gear, 1 top buggy, 1 sand-car.		
Largest number of horses owned at any time during the year,		7
Smallest number of horses owned at any time during the year,		5
Average number of horses owned during the year,		6

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$8,447 88
Equipment,	2,677 28
Land and buildings,	925 00
Cash and cash assets,	920 06
TOTAL ASSETS,	$12,970 22
LIABILITIES.	
Capital stock,	$8,000 00
Unfunded debt,	4,050 16
Surplus,	920 06
TOTAL LIABILITIES,	$12,970 22

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.	
To expenses,	$1,895 79
Balance carried forward Sept. 30, 1888,	920 06
	$2,815 85

Cr.	
By total income,	$2,815 85
	$2,815 85

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	1.666 miles.
Aggregate length of switches, sidings, etc.,	.113 "
Total length of track, measured as single track,	1.779 "
Weight of rail per yard, and description of rail: 25 pounds, T rail.	
Description of the several lines or routes operated by the company:	
From East Wareham Station on land of the estate of B. T. Simmons, thence through the town road, through Onset Avenue to Point Independence Ferry, in Wareham, Mass.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	1.666 miles.
Miles Run, etc.	
Total number of miles run during the year,	3,318
Total number of passengers carried in the cars,	23,609
Total number of round trips for the year,	996
Number of persons regularly employed by company,	5
Rates of fare,	5 to 10 cents.

Proper Address of the Company.

EAST WAREHAM, ONSET BAY & POINT INDEPENDENCE STREET RAILWAY COMPANY,

East Wareham, Mass.

Name and Residence of Officers.

T. B. Griffith, *President*, Wareham, Mass. I. B. Eldridge, *Treasurer*, East Wareham, Mass. M. M. Copeland, *Clerk of Corporation*, Wareham, Mass.

Name and Residence of Directors last Elected.

T. B. Griffith, Wareham, Mass. A. W. Wilcox, Worcester, Mass. Wm. F. Nye, Fairhaven, Mass. Kies Doane, Wareham, Mass. S. A. Griffin, Wareham, Mass. M. M. Copeland, Wareham, Mass. B. F. Caswell, Middleborough, Mass. I. B. Eldridge, Wareham, Mass. Shubael Wilder (deceased), Middleborough, Mass.

T. B. GRIFFITH,
A. W. WILCOX,
WILLIAM F. NYE,
KIES DOANE,
S. A. GRIFFIN,
M. M. COPELAND,
BENJ. F. CASWELL,
I. B. ELDRIDGE,
Directors.

I. B. ELDRIDGE,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

PLYMOUTH, ss. WAREHAM, Nov. 1, 1888. Then personally appeared T. B. Griffith, A. W. Wilcox, Wm. F. Nye, Kies Doane, S. A. Griffin, Benj. F. Caswell, I. B. Eldridge and M. M. Copeland, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

BENJ. F. GIBBS,
Justice of the Peace.

REPORT

OF THE

FITCHBURG STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$60,000 00	
Capital stock authorized by votes of company,	60,000 00	
Capital stock paid (par value of shares, $100),		$60,000 00
Number of stockholders,	22	
DEBT.		
Unfunded debt, as follows:		$14,857 11
Notes payable,	$12,000 00	
Accrued interest,	123 89	
Outstanding tickets,	933 22	
Dividends unpaid,	1,800 00	
TOTAL GROSS DEBT,		$14,857 11
Amount of cash assets, viz.:		4,096 53
Cash,	$2,988 07	
Supplies,	501 77	
Debit balances,	606 69	
NET DEBT,		$10,760 58
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$55,956 07	
TOTAL COST OF CONSTRUCTION,		$55,956 07
EQUIPMENT.		
Horses,		$5,735 00
Cars,		6,600 00
Other articles of equipment,		1,800 00
TOTAL COST OF EQUIPMENT,		$14,135 00
LAND AND BUILDINGS.		
Buildings owned by company needed in operating road,		$5,649 30
TOTAL COST OF LAND AND BUILDINGS,		$5,649 30
OTHER PROPERTY.		
Stock in Fitchburg Park Company,		$500 00

Total Amount of Permanent Investments,		$76,240 37
Cash assets,		4,096 53
Total Property and Assets of Company,		$80,336 90
Property Accounts: Charges and Credits during the Year.		
Extension of tracks (chiefly paving track, and new turnouts) (number of feet, 80),		$2,223 41
New horses (number, 12),		1,742 45
New cars (number, 1),		647 62
Other equipment,		194 40
Buildings,		591 52
Total Addition to Property,		$5,399 40
Property sold or reduced in valuation on the books, viz.:		2,891 89
Equipment,	$176 19	
Horses,	2,668 08	
Cars,	47 62	
Net Addition to Property for the Year,		$2,507 51
Revenue for the Year.		
Received from passengers on railways operated by this company,		$24,556 74
Received from sales of manure,		190 76
Total Earnings,		$24,747 50
Income from other sources:		184 70
Advertising,	$184 70	
Total Income from all Sources,		$24,932 20
Expenses of Operating the Railway for the Year.		
Repairs of road-bed and track,		$381 65
Repairs of cars and other vehicles, harness and horse-shoeing,		1,144 56
Repairs of buildings,		187 07
Wages and salaries of president, treasurer, superintendent and their clerks,		2,258 30
Wages and salaries of all other persons employed in operating the road,		7,919 29
Provender,		3,754 30
Taxes, State and local,		1,028 35
Insurance,		150 19
Damages for injuries to persons and property,		2,038 75
Office expenses, and all other expenses not included above,		2,775 92
Total Expenses of Operating,		$21,638 38
Net Income, Dividends, etc.		
Total Net Income above Operating Expenses,		$3,293 82
Interest accrued during the year,		123 89
Dividends declared (3 per cent.) for the year,		1,800 00
Balance for the year, or surplus,		1,369 93
Surplus at commencement of year,	$5,281 75	
Deduct depreciation: —		
Horses,	$948 08	
Cars,	47 62	
Equipment,	176 19	
	1,171 89	

Surplus at commencement of year as changed by aforesaid entries,	$4,109 86
TOTAL SURPLUS SEPT. 30, 1888,	$5,479 79

INVENTORY OF EQUIPMENT SEPT. 30, 1888.

Box cars,	5
Open cars,	5
Horses,	37
Harnesses (pairs of),	18
Harnesses (single),	5
Sleighs,	1
Other articles of equipment: One snow-plough, 1 snow-leveller, 2 snow-sleds, 1 herdic, 1 cart, 1 buggy wagon.	
Largest number of horses owned at any time during the year,	44
Smallest number of horses owned at any time during the year,	36
Average number of horses owned during the year,	38

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$55,956 07
Equipment,	14,135 00
Land and buildings,	5,649 30
Other property,	500 00
Cash and cash assets,	4,096 53
TOTAL ASSETS,	$80,336 90

LIABILITIES.

Capital stock,	$60,000 00
Unfunded debt,	13,057 11
Surplus,	5,479 79
Dividend unpaid,	1,800 00
TOTAL LIABILITIES,	$80,336 90

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To expenses,	$21,638 38
interest,	123 89
dividends,	1,800 00
depreciation,	1,171 89
Balance carried forward Sept. 30, 1888,	5,479 79
	$30,213 95

CR.

By balance Sept. 30, 1887,	$5,281 75
total income,	24,932 20
	$30,213 95

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	4.124 miles.

Aggregate length of switches, sidings, etc.,		.253 miles.
Total length of track measured as single track,		4.377 "
Total length of track paved,		2.389 "
Weight of rail per yard, and description of rail: tram, 35 pounds; T, 30 pounds.		
Description of the several lines or routes operated by the company: Fitchburg Park to Sanborn Road.		
Total length of railway measured as single track, not including sidings, etc., operated by this company,		4.124 miles.
MILES RUN, ETC.		
Total number of miles run during the year,		85,641
Total number of passengers carried in the cars,		409,981
Total number of round trips for the year:		
Local,	8,451	18,370
West Fitchburg,	8,591	
Opera House to Park,	187	
Goodrich Street to Park,	1,141	
Number of persons regularly employed by company,		20
Rates of fare,		5 to 8 cents.

PROPER ADDRESS OF THE COMPANY.

FITCHBURG STREET RAILWAY COMPANY,
FITCHBURG, MASS.

NAME AND RESIDENCE OF OFFICERS.

Henry A. Willis, *President*, Fitchburg, Mass. Wesley W. Sargent, *Superintendent*, Fitchburg, Mass. Benjamin F. Wallis, *Treasurer*, Fitchburg, Mass. Harris C. Hartwell, *Clerk of Corporation*, Fitchburg, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Henry A. Willis, Fitchburg, Mass. Harris C. Hartwell, Fitchburg, Mass. George H. Spencer, Fitchburg, Mass. Herbert I. Wallace, Fitchburg, Mass. George W. Weymouth, Fitchburg, Mass. James Phillips, Jr., Fitchburg, Mass. Edgar F. Belding, Fitchburg, Mass.

HENRY A. WILLIS,
HERBERT I. WALLACE,
GEORGE W. WEYMOUTH,
HARRIS C. HARTWELL,
EDGAR F. BELDING,
JAMES PHILLIPS, JR.,
GEO. H. SPENCER,
Directors.
BENJAMIN F. WALLIS,
Treasurer.
WESLEY W. SARGENT,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss. FITCHBURG, Oct. 31, 1888. Then personally appeared Henry A. Willis, Herbert I. Wallace, George W. Weymouth, Harris C. Hartwell, Edgar F. Belding, James Phillips, Jr., George H. Spencer, Benjamin F. Wallis and Wesley W. Sargent, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WILBUR B. TENNEY,
Justice of the Peace.

REPORT

OF THE

FRAMINGHAM UNION STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$60,000 00	
Capital stock authorized by votes of company,	60,000 00	
Capital stock paid (par value of shares, $100),		$56,480 00
Number of stockholders,	104	
DEBT.		
Unfunded debt, as follows:		$47,095 44
Bills payable, notes,	$47,095 44	
TOTAL GROSS DEBT,		$47,095 44
Amount of cash assets, viz.:		1,809 12
Cash,	$1,809 12	
NET DEBT,		$45,286 32
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$77,360 91	
Interest during construction, commissions, discounts, etc.,	76	
Engineering, agencies, salaries, and other expenses during construction,	1,218 66	
TOTAL COST OF CONSTRUCTION,		$78,580 33
EQUIPMENT.		
Horses,		$5,355 00
Cars,		11,000 00
Other articles of equipment,		425 00
TOTAL COST OF EQUIPMENT,		$16,780 00
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$2,100 00
Buildings owned by company needed in operating road,		6,022 84
TOTAL COST OF LAND AND BUILDINGS,		$8,122 84

Total Amount of Permanent Investments,		$103,483 17
Cash assets,		1,809 12
Total Property and Assets of Company,		$105,292 29
Revenue for the Year.		
Received from passengers on railways operated by this company,		$6,304 15
Received from sales of manure,		20 62
Total Earnings,		$6,324 77
Income from other sources:		336 50
Interest,	$304 85	
Rental of stalls,	31 65	
Total Income from all Sources,		$6,661 27
Expenses of Operating the Railway for the Year.		
Repairs of cars and other vehicles, harness and horse-shoeing,		$135 78
Repairs of buildings,		8 50
Renewal of horses,		320 00
Wages and salaries of president, treasurer, superintendent and their clerks,		195 00
Wages and salaries of all other persons employed in operating the road,		2,188 11
Provender,		1,105 99
Taxes, State and local,		18 20
Insurance,		228 00
Office expenses, and all other expenses not included above,		744 84
Total Expenses of Operating,		$4,944 42
Net Income, Dividends, etc.		
Total Net Income above Operating Expenses,		$1,716 85
Balance for the year, or surplus,		1,716 85
Total Surplus Sept. 30, 1888,		1,716 85
Inventory of Equipment Sept. 30, 1888.		
Box cars,		9
Open cars,		4
Horses,		34
Harnesses (pairs of),		12
Largest number of horses owned at any time during the year,		34
Smallest number of horses owned at any time during the year,		15
Average number of horses owned during the year,		24

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$78,580 33
Equipment,	16,780 00
Land and buildings,	8,122 84
Cash and cash assets,	1,809 12
Total Assets,	$105,292 29
Liabilities.	
Capital stock,	$56,480 00
Unfunded debt,	47,095 44
Surplus,	1,716 85
Total Liabilities,	$105,292 29

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.	
Dr.	
To expenses,	$4,944 42
Balance carried forward Sept. 30, 1888,	1,716 85
	$6,661 27
Cr.	
By total income,	$6,661 27
	$6,661 27

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	6.609 miles.
Aggregate length of switches, sidings, etc.,	.441 "
Total length of track, measured as single track,	7.050 "
Total length of track paved,	4.990 "
Weight of rail per yard, and description of rail: Side-bearing, 35 pounds per yard, steel; T, 30 pounds per yard, steel.	
Description of the several lines or routes operated by the company:	
Route from Boston & Albany Railroad tracks at South Framingham to Framingham Centre; distance, 2.28 miles.	
Route from Boston & Albany Railroad tracks at South Framingham to Saxonville; distance, 3.75 miles.	
Route from Concord Street to Para Rubber Company Works on Howard Street; distance, .38 miles.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	6.609 miles.

Miles Run, etc.	
Total number of miles run during the year,	15,492
Total number of passengers carried in the cars,	103,491
Total number of round trips for the year,	3,157
Number of persons regularly employed by company,	14
Rates of fare,*	5 & 10 cents.

Proper Address of the Company.

FRAMINGHAM UNION STREET RAILWAY COMPANY,
South Framingham, Mass.

Name and Residence of Officers.

Charles H. Emerson, *President*, South Framingham, Mass. Benjamin J. Weeks, *Superintendent*, South Framingham, Mass. Samuel B. Bird, *Treasurer*, Framingham, Mass. Clifford Folger, *Clerk of Corporation*, South Framingham, Mass.

Name and Residence of Directors last Elected.

J. A. Beauvais, New Bedford, Mass. C. F. Shaw, New Bedford, Mass. C. H. Emerson, South Framingham, Mass. Samuel B. Bird, Framingham,

* Of the 10-cent fare to Saxonville, tickets are sold 12 for one dollar.

Mass. L. F. Childs, Framingham, Mass. Clifford Folger, South Framingham, Mass. L. F. Fuller, Saxonville, Mass. J. R. Entwistle, Saxonville, Mass. E. F. Sprague, Saxonville, Mass.

C. H. EMERSON,
L. F. FULLER,
CLIFFORD FOLGER,
SAMUEL B. BIRD,
L. F. CHILDS,
Directors.

SAMUEL B. BIRD,
Treasurer.

BENJ. J. WEEKS,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. FRAMINGHAM, Dec. 18, 1888. Then personally appeared C. H. Emerson, L. F. Fuller, Clifford Folger, Samuel B. Bird, L. F. Childs and Benj. J. Weeks, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

BURTIS JUDD,
Justice of the Peace.

REPORT

OF THE

GLOBE STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$300,000 00	
Capital stock authorized by votes of company,	300,000 00	
Capital stock paid (par value of shares, $100),		$300,000 00
Number of stockholders,	112	
DEBT.		
Unfunded debt, as follows:		$25,368 80
Bills payable, notes,	$18,500 00	
Bills payable, ledger balances,	6,868 80	
TOTAL GROSS DEBT,		$25,368 80
Amount of cash assets, viz.:		13,397 92
Cash,	$3,986 14	
Supplies,	8,673 41	
Debit balances,	738 37	
NET DEBT,		$11,970 88
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$206,871 51
EQUIPMENT.		
Horses,		$24,900 00
Cars,		38,732 00
Other articles of equipment,		3,215 41
TOTAL COST OF EQUIPMENT,		$66,847 41
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$58,324 41
TOTAL COST OF LAND AND BUILDINGS,		$58,324 41
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$332,043 33
Cash assets,		13,397 92
TOTAL PROPERTY AND ASSETS OF COMPANY,		$345,441 25

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 528),		$1,753 03
New horses (number, 19),		1,900 00
Other equipment,		190 41
Land and buildings,		786 28
TOTAL ADDITION TO PROPERTY,		$4,629 72
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$127,634 77
Received from sales of manure,		1,399 94
TOTAL EARNINGS,		$129,034 71
Income from other sources:		574 00
Teaming,	$30 00	
Advertisements in cars,	544 00	
TOTAL INCOME FROM ALL SOURCES,		$129,608 71
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$9,263 77
Repairs of cars and other vehicles, harness and horse-shoeing,		8,584 06
Repairs of buildings,		993 94
Renewal of horses,		4,933 34
Wages and salaries of president, treasurer, superintendent, and their clerks,		5,500 00
Wages and salaries of all other persons employed in operating the road,		44,717 56
Provender,		21,274 41
Taxes, State and local,		5,409 66
Insurance,		1,369 00
Damages for injuries to persons and property,		1,406 82
Office expenses, and all other expenses not included above,		6,860 31
TOTAL EXPENSES OF OPERATING,		$110,312 87
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$19,295 84
Interest accrued during the year,		1,017 25
Dividends declared (6 per cent.) for the year,		18,000 00
Balance for the year, or surplus,		278 59
Surplus at commencement of year,		19,793 86
TOTAL SURPLUS SEPT. 30, 1888,		$20,072 45
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		28
Open cars,		33
Horses,		249
Harnesses (pairs of),		60
Sleighs,		5
Other articles of equipment:		
One snow-plough, 3 snow-levellers, 1 snow-cart, 1 reach, 1 single and 3 double carts, 2 buggies, 1 express wagon, 3 horse-powers, 3 hay cutters, rail cleaners, blacksmith shop, equipment, etc.		
Largest number of horses owned at any time during the year,		251
Smallest number of horses owned at any time during the year,		218
Average number of horses owned during the year,		233

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$206,871 51
Equipment,	66,847 41
Land and buildings,	58,324 41
Cash and cash assets,	13,397 92
TOTAL ASSETS,	$345,441 25

LIABILITIES.

Capital stock,	$300,000 00
Unfunded debt,	25,368 80
Surplus,	20,072 45
TOTAL LIABILITIES,	$345,441 25

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To expenses,	$110,312 87
interest,	1,017 25
dividends,	18,000 00
Balance carried forward Sept. 30, 1888,	20,072 45
	$149,402 57

CR.

By balance Sept. 30, 1887,	$19,793 86
total income,	129,608 71
	$149,402 57

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	13.227 miles.
Aggregate length of switches, sidings, etc.,	3.270 "
Total length of track, measured as single track,	16.497 "
Total length of track paved,	15.997 "

Weight of rail per yard, and description of rail: Side-bearing, iron, 35 pounds per yard; steel, 35, 46 and 47 pounds per yard.

Description of the several lines or routes operated by the company:

North Main and Pleasant Streets Route. — Steepbrook to Flint Village via North Main and Pleasant streets. Spur tracks to depots in Old Colony Avenue and Eight Rod Way.

Globe Village and Shove Mill Route. — City Hall to Shove Mill via South Main, East Main, East Globe and Shove streets. Spur track in Broadway to car house.

Winter, Main and Fourth Streets Route. — Hanover Street, New Boston Road via N. B Road, Highland Avenue, Winter, Franklin, North and South Main, Rodman, Fourth, Lyons and Second streets, and Eight Rod Way and Stafford Road to car house.

Bedford and Rodman Streets Route. — From corner Quarry and County streets to corner Rodman and Warren streets, via Quarry, Bedford, Main, Pleasant, Hartwell, Fourth and Rodman streets.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . .	13.227 miles.

MILES RUN, ETC.

Total number of miles run during the year, ...	435,416
Total number of passengers carried in the cars, . . .	2,598,922
Total number of round trips for the year, ...	103,657
Number of persons regularly employed by company, . .	86
Rates of fare, ...	5, 3 & 2½ cts.

LIST OF ACCIDENTS.

	From causes beyond their own control.		From their own misconduct or carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	–	–	–	4	–	4
Employees, ...	–	–	–	–	–	–
Others, ...	–	–	–	1	–	1

STATEMENT OF EACH ACCIDENT.

Oct. 17, 1887. — Boy stepped backwards in front of car. Knocked down and foot run over.

November 24. — Man, intoxicated, fell from motionless car and broke leg.

April 13, 1888. — Man fell from front platform of car and injured leg.

September 1. — Woman jumped from moving car and fell, breaking hip.

September 3. — Woman jumped from car which had collided with a buggy, spraining wrist.

PROPER ADDRESS OF THE COMPANY.

GLOBE STREET RAILWAY COMPANY,

FALL RIVER, MASS.

NAME AND RESIDENCE OF OFFICERS.

Frank S. Stevens, *President*, Swansea, Mass. John H. Bowker, *Superintendent*, Fall River, Mass. Frank W. Brightman, *Treasurer*, Fall River, Mass. Marcus G. B. Swift, *Clerk of Corporation*, Fall River, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Frank S. Stevens, Swansea, Mass. John S. Brayton, Fall River, Mass.
Andrew J. Borden, Fall River, Mass. George H. Hawes, Fall River, Mass.
Marcus G. B. Swift, Fall River, Mass. Simeon B. Chase, Fall River, Mass.
Joseph A. Beauvais, New Bedford, Mass.

F. S. STEVENS,
J. A. BEAUVAIS,
JOHN S. BRAYTON,
GEO. H. HAWES,
SIMEON B. CHASE,
ANDREW J. BORDEN,
Directors.

FRANK W. BRIGHTMAN,
Treasurer.

JOHN H. BOWKER,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

BRISTOL, ss. FALL RIVER, Oct. 15, 1888. Then personally appeared said John H. Bowker and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief; and on October 16, 1888, personally appeared said Frank W. Brightman, F. S. Stevens, J. A. Beauvais, John S. Brayton, Geo. H. Hawes, Simeon B. Chase and Andrew J. Borden, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

MARCUS G. B. SWIFT,
Justice of the Peace.

REPORT

OF THE

GLOUCESTER STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.

CAPITAL STOCK.

Capital stock authorized by charter,	$60,000 00	
Capital stock authorized by votes of company,	60,000 00	
Capital stock paid (par value of shares, $100),		$60,000 00
Number of stockholders,	11	

DEBT.

Funded debt, as follows:		$34,000 00
Mortgage bonds due April 1, 1907, rate of interest 5 per cent.,	$34,000 00	
TOTAL GROSS DEBT,		$34,000 00
Amount of cash assets, viz.:		2,463 34
Cash,	$1,866 37	
Supplies,	346 22	
Debit balances,	250 75	
NET DEBT,		$31,536 66

PERMANENT INVESTMENTS.

RAILWAY.

Grading and paving,	$11,028 24	
Track, including timber, rails, etc., and laying,	28,638 47	
Interest during construction, commissions, discounts, etc.,	3,249 99	
Engineering, agencies, salaries, and other expenses during construction,	1,275 11	
TOTAL COST OF CONSTRUCTION,		$44,191 81

EQUIPMENT.

Horses,	$14,400 00
Cars,	9,644 00
Other articles of equipment,	3,170 51
TOTAL COST OF EQUIPMENT,	$27,214 51

LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$1,615 00
Buildings owned by company needed in operating road,		15,685 09
TOTAL COST OF LAND AND BUILDINGS,		$17,300 09
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$88,706 41
Cash assets,		2,463 34
TOTAL PROPERTY AND ASSETS OF COMPANY,		$91,169 75
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Other equipment,		$64 56
TOTAL ADDITION TO PROPERTY,		$64 56
Property sold or reduced in valuation on the books, viz.:		837 95
Stable,	$37 95	
Horses,	800 00	
NET REDUCTION TO PROPERTY FOR THE YEAR,		$773 39
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$30,521 51
Received from sales of manure,		37 75
TOTAL EARNINGS,		$30,559 26
Income from other sources:		392 54
Advertising,	$230 00	
Blacksmith shop,	162 54	
TOTAL INCOME FROM ALL SOURCES,		$30,951 80
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$1,834 86
Repairs of cars and other vehicles, harness and horse-shoeing,		2,213 00
Repairs of buildings,		138 79
Renewal of horses,		638 15
Wages and salaries of president, treasurer, superintendent and their clerks,		1,670 34
Wages and salaries of all other persons employed in operating the road,		13,798 48
Provender,		7,543 06
Taxes, State and local,		595 47
Insurance,		278 13
Damages for injuries to persons and property,		178 60
Office expenses, and all other expenses not included above,		1,123 59
TOTAL EXPENSES OF OPERATING,		$30,012 47
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$939 33
Interest accrued during the year,		1,700 00
Balance for the year, or deficit,		760 67
Deficit at commencement of year,		2,069 58
TOTAL DEFICIT SEPT. 30, 1888,		$2,830 25

Inventory of Equipment Sept. 30, 1888.	
Box cars,	6
Open cars,	7
Horses,	72
Harnesses (pairs of),	45
Other articles of equipment:	
One freight car, 1 snow-plough, 1 express wagon, 1 sleigh, 1 tip-cart, 1 buggy, 1 Concord wagon, 1 leveller, tools, furniture, etc.	
Largest number of horses owned at any time during the year,	76
Smallest number of horses owned at any time during the year,	72
Average number of horses owned during the year,	74

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$44,191 81
Equipment,	27,214 51
Land and buildings,	17,300 09
Cash and cash assets,	2,463 34
Deficit,	2,830 25
Total Assets,	$94,000 00
Liabilities.	
Capital stock,	$60,000 00
Funded debt,	34,000 00
Total Liabilities,	$94,000 00

Copy of Profit and Loss Account for the Year ending Sept 30, 1888.

Dr.	
To balance Sept. 30, 1887,	$2,069 58
expenses,	30,012 47
interest,	1,700 00
	$33,782 05
Cr.	
By total income,	$30,951 80
Balance carried forward Sept. 30, 1888,	2,830 25
	$33,782 05

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	4.14 miles.
Aggregate length of switches, sidings, etc.,	.37 "
Total length of track, measured as single track,	4 51 "
Total length of track paved,	3.33 "
Weight of rail per yard, and description of rail: 38, 35 and 25 pounds.	

Total length of railway measured as single track, not including sidings, etc., operated by this company, . . .	4.14 miles.
MILES RUN, ETC.	
Total number of miles run during the year, ...	116,533
Total number of passengers carried in the cars, . . .	577,142
Total number of round trips for the year, ...	18,767
Number of persons regularly employed by company, . .	30
Rates of fare, ...	5 and 6 cents.

LIST OF ACCIDENTS.

	FROM CAUSES BEYOND THEIR OWN CONTROL.		FROM THEIR OWN MISCONDUCT OR CARELESSNESS.		TOTAL.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	–	–	–	–	–	–
Employees, ...	–	–	–	–	–	–
Others, ...	–	1	–	–	–	1

STATEMENT OF EACH ACCIDENT.

A boy said to have been injured by being struck by car step.

PROPER ADDRESS OF THE COMPANY.

GLOUCESTER STREET RAILWAY COMPANY,
GLOUCESTER, MASS.

NAME AND RESIDENCE OF OFFICERS.

Morris C. Fitch, *President*, Gloucester, Mass. W. A. Strangman, *Superintendent*, Gloucester, Mass. F. W. Homans, *Treasurer*, Gloucester, Mass. D. S. Presson, *Clerk of Corporation*, Gloucester, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Morris C. Fitch, Gloucester, Mass. Walter A. Jones, West Troy, N. Y. J. H. Lewis, Boston, Mass. H. O. Flint, Salem, Mass. J. P. Langmaid, Salem, Mass. Henry Souther, Gloucester, Mass. F. W. Homans, Gloucester, Mass. Thos. Hodge, Gloucester, Mass. W. A. Homans, Jr., Gloucester, Mass. J. C. Brock, New Bedford, Mass. D. S. Presson, Gloucester, Mass.

MORRIS C. FITCH,
F. W. HOMANS,
THOMAS HODGE,
W. A. HOMANS, Jr.,
H. O. FLINT,
D. S. PRESSON,
HENRY SOUTHER,
Directors.

F. W. HOMANS,
Treasurer.

W. A. STRANGMAN,
Superintendent.

Commonwealth of Massachusetts.

Essex, ss. Gloucester, Oct. 23, 1888. Then personally appeared F. W. Homans, Thomas Hodge, W. A. Homans, Jr., H. O. Flint and D. S. Presson, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

AARON PARSONS,
Justice of the Peace.

REPORT

OF THE

HAVERHILL & GROVELAND STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$144,000 00	
Capital stock authorized by votes of company,	144,000 00	
Capital stock paid (par value of shares, $100),		$144,000 00
Number of stockholders,	68	
DEBT.		
Unfunded debt as follows:		$8,000 00
Promissory note,	$8,000 00	
TOTAL GROSS DEBT,		$8,000 00
Amount of cash assets, viz.:		9,464 94
Cash,	$2,464 94	
Debit balances,	7,000 00	
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$71,089 03	
Engineering, agencies, salaries and other expenses during construction,	1,520 00	
TOTAL COST OF CONSTRUCTION,		$72,609 03
EQUIPMENT.		
Horses,		$8,750 00
Cars,		21,385 00
Other articles of equipment,		8,626 01
TOTAL COST OF EQUIPMENT,		$38,761 01
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$6,725 00
Buildings owned by company needed in operating road,		18,379 74
TOTAL COST OF LAND AND BUILDINGS,		$25,104 74
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$136,474 78
Cash assets,		9,464 94
TOTAL PROPERTY AND ASSETS OF COMPANY,		$145,939 72

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks,		$1,825 13
New horses (number, 5),		680 00
Other equipment,		461 00
Land and buildings,		804 05
TOTAL ADDITION TO PROPERTY,		$3,770 18
Property sold or reduced in valuation on the books, viz.:		11,320 18
Sale of house lots (rear of stable),	$1,750 00	
Sale of horses,	3,027 50	
Sale of iron rails,	120 43	
Shrinkage,	5,660 00	
Horses charged expenses,	762 25	
NET REDUCTION OF PROPERTY FOR THE YEAR,		$7,550 00
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$47,115 89
Received from sales of manure,		358 24
TOTAL EARNINGS,		$47,474 13
Income of other sources:		566 25
Rent of waiting-room,	$360 00	
Rent of advertising spaces,	206 25	
TOTAL INCOME FROM ALL SOURCES,		$48,040 38
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$3,974 42
Repairs of cars and other vehicles, harness and horse-shoeing,		3,642 28
Repairs of buildings,		102 14
Renewal of horses,		762 25
Wages and salaries of president, treasurer, superintendent and their clerks,		2,600 00
Wages and salaries of all other persons employed in operating the road,		17,196 74
Provender,		9,426 53
Taxes, State and local,		1,892 41
Insurance,		621 60
Damages for injuries to persons and property,		10 00
Office expenses, and all other expenses not included above,		2,390 36
TOTAL EXPENSES OF OPERATING,		$42,618 73
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$5,421 65
Interest accrued during the year,		585 77
Balance for the year, or surplus,		4,835 88
Deficit at commencement of year,	$5,236 16	
Add depreciation of track and equipment,	5,660 00	
Deficit at commencement of year as changed by aforesaid entries,		10,896 16
TOTAL DEFICIT SEPT. 30, 1888,		6,060 28
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		21
Open cars,		17
Horses,		83
Harnesses (pairs of),		51
Omnibuses,		1

Sleighs,	4
Other articles of equipment:	
Two wind-mills, 4 snow-ploughs, 2 snow-levellers, 2 safes, office furniture, etc.	
Largest number of horses owned at any time during the year,	106
Smallest number of horses owned at any time during the year,	83
Average number of horses owned during the year,	94

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$72,609 03
Equipment,	38,761 01
Land and buildings,	25,104 74
Other property (bills receivable),	7,000 00
Cash and cash assets,	2,464 94
Deficit balance,	6,060 28
TOTAL ASSETS,	$152,000 00

LIABILITIES.

Capital stock,	$144,000 00
Unfunded debt,	8,000 00
TOTAL LIABILITIES,	$152,000 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To balance Sept. 30, 1887,	$5,236 16
expenses,	42,618 73
interest,	585 77
depreciation of horses,	1,660 00
depreciation of cars,	1,000 00
depreciation of ploughs, harnesses, etc.,	500 00
depreciation of track,	2,500 00
	$54,100 66

CR.

By total income,	$48,040 38
Balance carried forward Sept. 30, 1888,	6,060 28
	$54,100 66

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	12.558 miles.
Aggregate length of switches, sidings, etc.,	1.416 "
Total length of track, measured as single track,	13.974 "
Total length of track paved,	6.541 "
Weight of rail per yard, and description of rail: 30 pounds T and 35 pounds flat.	
Description of the several lines or routes operated by the company:	
Haverhill depot to West Newbury.	
Haverhill depot to Bradford.	

Haverhill depot to Mount Washington.	
Haverhill depot to Dustin Square.	
Belt Line.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . . .	12.558 miles.

MILES RUN, ETC.

Total number of miles run during the year, ...	149,676
Total number of passengers carried in the cars, . . .	754,155
Total number of round trips for the year, ...	24,949
Number of persons regularly employed by company, . .	30
Rates of fare: Cash, 15, 10 and 6 cents; half, 8, 5 and 3 cents; tickets, 12½, 7 2.7 and 5 cents.	

PROPER ADDRESS OF THE COMPANY.

HAVERHILL & GROVELAND STREET RAILWAY COMPANY,
3 WATER STREET, HAVERHILL, MASS.

NAME AND RESIDENCE OF OFFICERS.

Ira O. Sawyer, *President*, Haverhill, Mass. John A. Colby, *Treasurer and Clerk of Corporation*, Haverhill, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Ira O. Sawyer, Haverhill, Mass. Levi Taylor, Haverhill, Mass. Ira A. Abbott, Haverhill, Mass. John A. Gale, Haverhill, Mass. Wm. H. Smiley, Haverhill, Mass. John A. Colby, Haverhill, Mass. P. C. Swett, Haverhill, Mass.

IRA O. SAWYER,
LEVI TAYLOR,
WM. H. SMILEY,
P. C. SWETT,
JOHN A. COLBY,
Directors.

JOHN A. COLBY,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Nov. 5, 1888. Then personally appeared Ira O. Sawyer, Levi Taylor, William H. Smiley, P. C. Swett and John A. Colby, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

IRA A. ABBOTT,
Justice of the Peace.

REPORT

OF THE

HOLYOKE STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$50,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock paid (par value of shares, $100),		$50,000 00
Number of stockholders,	14	
DEBT.		
Unfunded debt as follows:		$16,600 00
Notes payable,	$16,600 00	
TOTAL GROSS DEBT,		$16,600 00
Amount of cash assets, viz.:		222 30
Cash,	$17 00	
Supplies,	205 30	
NET DEBT,		$16,377 70
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving,	$10,339 31	
Track, including timber, rails, etc., and laying,	31,368 01	
TOTAL COST OF CONSTRUCTION,		$41,707 32
EQUIPMENT.		
Horses,		$8,720 00
Cars,		10,613 60
Other articles of equipment,		2,469 54
TOTAL COST OF EQUIPMENT,		$21,803 14
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$820 46
TOTAL COST OF LAND AND BUILDINGS,		$820 46
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$64,330 92
Cash assets,		222 30
TOTAL PROPERTY AND ASSETS OF COMPANY,		$64,553 22
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks and paving,		$13,680 88
Other equipment,		385 00
TOTAL ADDITION TO PROPERTY,		$14,065 88

Revenue for the Year.		
Received from passengers on railways operated by this company,		$25,055 46
Received from sales of manure,		276 55
Total Earnings,		$25,332 01
Income from other sources:		28 00
Hay scales,	$28 00	
Total Income from all Sources,		$25,360 01
Expenses of Operating the Railway for the Year.		
Repairs of road-bed and track,		$584 47
Repairs of cars and other vehicles, harness and horse-shoeing,		1,622 91
Repairs of buildings,		75 69
Renewal of horses,		1,190 00
Wages and salaries of president, treasurer, superintendent and their clerks,		1,516 64
Wages and salaries of all other persons employed in operating the road,		12,176 41
Provender,		7,395 80
Taxes, State and local,		395 97
Insurance,		305 98
Office expenses, and all other expenses not included above,		2,524 74
Snow expense,		1,120 23
Total Expenses of Operating,		$28,908 84
Net Income, Dividends, etc.		
Total Net Deficit above Operating Expenses,		$3,548 83
Dividends declared (5 per cent.) for the year,		1,250 00
Balance for the year, or deficit,		4,798 83
Surplus at commencement of year,		2,752 05
Total Deficit Sept. 30, 1888,		$2,046 78
Inventory of Equipment Sept. 30, 1888.		
Box cars,		9
Open cars,		6
Horses,		56
Harnesses (pairs of),		13
Omnibuses,		1
Sleighs,		1
Other articles of equipment: One snow-plough, 1 two-horse wagon, 1 two-horse cart, 1 business wagon.		
Largest number of horses owned at any time during the year,		56
Smallest number of horses owned at any time during the year,		54
Average number of horses owned during the year,		55

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$41,707 32
Equipment,	21,803 14
Land and buildings,	820 46
Cash and cash assets,	222 30
Deficit,	2,046 78
Total Assets,	$66,600 00

Liabilities.	
Capital stock,	$50,000 00
Unfunded debt,	16,600 00
Total Liabilities,	$66,600 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$28,908 84
dividends,	1,250 00
	$30,158 84
Cr.	
By balance Sept. 30, 1887,	$2,752 05
total income,	25,360 01
Balance carried forward Sept. 30, 1888,	2,046 78
	$30,158 84

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	4.045 miles.
Aggregate length of switches, sidings, etc.,	1.112 "
Total length of track, measured as single track,	5.157 "
Total length of track paved,	4.078 "
Weight of rail per yard, and description of rail: 35 pounds tramway and 50 pounds T rail.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	4.045 "
Miles Run, etc.	
Total number of miles run during the year,	113,483
Total number of passengers carried in the cars,	478,726
Total number of round trips for the year,	29,633
Number of persons regularly employed by company,	25
Rates of fare,	7 and 5 cents.

Proper Address of the Company.

HOLYOKE STREET RAILWAY COMPANY,
Holyoke, Mass.

Name and Residence of Officers.

Levi Perkins, *President*, Holyoke, Mass. Hiram M. Smith, *Superintendent*, Holyoke, Mass. Wm. S. Loomis, *Treasurer*, Holyoke, Mass. Wm. H. Brooks, *Clerk of Corporation*, Holyoke, Mass.

Name and Residence of Directors last Elected.

Levi Perkins, Holyoke, Mass. R. B. Johnson, Holyoke, Mass. C. H. Heywood, Holyoke, Mass. Wm. S. Loomis, Holyoke, Mass. L. M. Tuttle,

Holyoke, Mass. C. H. Prentiss, Holyoke, Mass. J. F. Sullivan, Holyoke, Mass. J. G. Mackintosh, Holyoke, Mass.

LEVI PERKINS,
R. B. JOHNSON,
J. G. MACKINTOSH,
WM. S. LOOMIS,
L. M. TUTTLE,
C. H. PRENTISS,
C. H. HEYWOOD,
J. F. SULLIVAN,
Directors.
WM. S. LOOMIS,
Treasurer.
HIRAM M. SMITH,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

HAMPDEN, ss. Nov. 5, 1888. Then personally appeared Levi Perkins, R. B. Johnson, J. G. Mackintosh, W. S. Loomis, L. M. Tuttle, C. H. Prentiss, C. H. Heywood and J. F. Sullivan, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. W. JOHNSON,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

HAMPDEN, ss. Nov. 5, 1888. Then personally appeared Hiram M. Smith, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

WM. S. LOOMIS,
Notary Public.

REPORT

OF THE

HOOSAC VALLEY STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$50,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock paid (par value of shares, $100),		$50,000 00
Number of stockholders,	7	
DEBT.		
Funded debt, as follows:		$50,000 00
Mortgage bonds due 1906, rate of interest 6 per cent.,	$50,000 00	
Unfunded debt, as follows:		21,725 24
Notes payable,	$20,725 24	
Accrued interest,	1,000 00	
TOTAL GROSS DEBT,		$71,725 24
Amount of cash assets, viz.:		4,267 51
Cash,	$4,267 51	
NET DEBT,		$67,457 73
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$94,217 15
EQUIPMENT.		
Horses,		$4,955 00
Cars,		5,966 00
Other articles of equipment,		5,018 83
TOTAL COST OF EQUIPMENT,		$15,939 83
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$3,600 00
Buildings owned by company needed in operating road,		3,500 00
TOTAL COST OF LAND AND BUILDINGS,		$7,100 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$117,256 98
Cash assets,		4,267 51
TOTAL PROPERTY AND ASSETS OF COMPANY,		$121,524 49

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
New horses (number, 4),		$475 00
New cars (number, 2),		1,066 00
Other equipment,		296 12
TOTAL ADDITION TO PROPERTY,		$1,837 12
Property sold or reduced in valuation on the books, viz.:		3,270 00
Car burned,	$600 00	
Motor sold,	2,600 00	
Horse sold,	70 00	
NET REDUCTION TO PROPERTY FOR THE YEAR,		$1,432 88
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$18,212 43
Received from mails and express,		137 92
Received from sales of manure,		83 00
TOTAL EARNINGS,		$18,433 35
Income from other sources:		338 27
Advertising,	$338 27	
TOTAL INCOME FROM ALL SOURCES,		$18,771 62
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$167 86
Repairs of cars and other vehicles, harness and horse-shoeing,		292 46
Repairs of buildings,		54 87
Renewal of horses,		475 00
Wages and salaries of president, treasurer, superintendent and their clerks,		913 64
Wages and salaries of all other persons employed in operating the road,		6,537 49
Provender,		3,683 13
Taxes, State and local,		54 93
Insurance,		141 54
Damages for injuries to persons and property,		482 56
Office expenses, and all other expenses not included above,		1,276 14
TOTAL EXPENSES OF OPERATING,		$14,079 62
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$4,692 00
Interest accrued during the year,		3,858 87
Balance for the year, or surplus,		833 13
Deficit at commencement of year,	$2,581 44	
Deduct:		
Adjustment of accounts,	1,547 56	
Deficit at commencement of year, as changed by aforesaid entries,		1,033 88
TOTAL DEFICIT SEPT. 30, 1888,		$200 75
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		7
Open cars,		2
Horses,		32
Harnesses (pairs of),		16
Sleighs,		1

Other articles of equipment:	
One snow-plough, 1 road-scraper, 1 wagon, 7 registers.	
Largest number of horses owned at any time during the year,	33
Smallest number of horses owned at any time during the year,	32
Average number of horses owned during the year,	32

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$94,217 15
Equipment,	15,939 83
Land and buildings,	7,100 00
Cash and cash assets,	4,267 51
Deficit,	200 75
TOTAL ASSETS,	$121,725 24

LIABILITIES.

Capital stock,	$50,000 00
Funded debt,	50,000 00
Unfunded debt,	21,725 24
TOTAL LIABILITIES,	$121,725 24

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To balance Sept. 30, 1887,	$2,581 44
expenses,	14,079 62
interest,	3,858 87
	$20,519 93

CR.

By total income,	$18,771 62
adjustment of accounts,	1,547 56
Balance carried forward Sept. 30, 1888,	200 75
	$20,519 93

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	5.953 miles.
Aggregate length of switches, sidings, etc.,	.279 "
Total length of track, measured as single track,	6.232 "
Total length of railway measured as single track, not including sidings, etc., operated by this company,	5.953 "

MILES RUN, ETC.

Total number of miles run during the year,	78,180
Total number of passengers carried in the cars,	334,027
Total number of round trips for the year,	6,515
Number of persons regularly employed by company,	13
Rates of fare: 6 cents, or 20 tickets for $1.00.	

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	-	-	1	-	1
Employees, ...	-	-	-	-	-	-
Others, ...	-	-	2	-	2	-

Statement of Each Accident.

May, 1888. — An Italian child, Palernio, three years of age, was killed on South State Street, North Adams. The child was playing in the highway, and, when called by its mother, started for the house, and running in front of the horses, was knocked down and run over.

September 20. — Michael Curran, aged 75, was killed at Renfrew. Was walking in the street, and, becoming confused, was knocked down by horses, run over, and died from injuries two days thereafter.

Mrs. McCarthy, the only passenger injured, jumped from a car which became for the moment unmanageable, owing to trouble with brake, while going down a grade. Was slightly injured about head and shoulders.

Proper Address of the Company.

HOOSAC VALLEY STREET RAILWAY COMPANY,
North Adams, Mass.

Name and Residence of Officers.

C. Q. Richmond, *President and Treasurer*, North Adams, Mass. H. A. Fitzsimons, *Superintendent*, North Adams, Mass. S. Proctor Thayer, *Clerk of Corporation*, North Adams, Mass.

Name and Residence of Directors last Elected.

D. M. Monty, Sandy Hill, N. Y. S. Proctor Thayer, North Adams, Mass. C. Q. Richmond, North Adams, Mass. Eugene Griffin, Boston, Mass. Robt. P. Clapp, Boston, Mass.

EUGENE GRIFFIN,
ROBERT P. CLAPP,
C. Q. RICHMOND,
Directors.

C. Q. RICHMOND,
Treasurer.

H. A. FITZSIMONS,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

BERKSHIRE, ss. Nov. 23, 1888. Then personally appeared the above-named C. Q. Richmond and H. A. Fitzsimons, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

GEORGE P. LAWRENCE,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 26, 1888. Then personally appeared the above-named Eugene Griffin and Robt. P. Clapp, and severally made oath to the truth of the foregoing statement by them subscribed, to their best knowledge and belief. Before me,

GEO. W. DAVENPORT,
Notary Public.

REPORT

OF THE

LOWELL HORSE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$200,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock paid (par value of shares, $100),		$100,000 00
Number of stockholders,	78	
DEBT.		
Funded debt, as follows:		$50,000 00
Bonds due July 1, 1907, rate of interest 5 per cent.,	$50,000 00	
Unfunded debt, as follows:		56,403 00
Mortgage notes,	$6,000 00	
Land note,	2,000 00	
Notes signed by the company and directors,	47,332 00	
Dividends uncalled for,	1,071 00	
TOTAL GROSS DEBT,		$106,403 00
Amount of cash assets, viz.:		14,151 91
Cash,	$14,151 91	
NET DEBT,		$92,251 09
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving,	$53,911 11	
Track, including timber, rails, etc., and laying,	88,480 53	
Engineering, agencies, salaries and other expenses during construction,	542 41	
TOTAL COST OF CONSTRUCTION,		$142,934 05
EQUIPMENT.		
Horses,		$27,933 86
Cars,		35,689 56
Other articles of equipment,		4,756 25
TOTAL COST OF EQUIPMENT,		$68,379 67
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$20,529 97
Buildings owned by company needed in operating road,		19,705 60
TOTAL COST OF LAND AND BUILDINGS,		$40,235 57

TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$251,549 29
Cash assets,		14,151 91
TOTAL PROPERTY AND ASSETS OF COMPANY,		$265,701 20
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 5,755),*		$27,022 62
New horses (number, 43),		6,804 56
New cars (number, 13),		13,068 36
Other equipment (blacksmithing articles, 8 sets of harnesses, etc.),		1,430 54
Land and buildings,		8,215 31
TOTAL ADDITION TO PROPERTY,		$56,541 39
Property sold or reduced in valuation on the books, viz.:		1,034 70
From sale of horses,	$1,034 70	
NET ADDITION TO PROPERTY FOR THE YEAR,		$55,506 69
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$107,742 47
Received from other railways as tolls or rent:		158 42
Lowell & Dracut Street Railway,	$158 42	
Received from sales of manure,		631 66
TOTAL EARNINGS,		$108,532 55
Income from other sources:		18 88
Sundries,	$18 88	
TOTAL INCOME FROM ALL SOURCES,		$108,551 43
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$788 81
Repairs of cars and other vehicles, harness and horse-shoeing,		6,615 12
Wages and salaries of president, treasurer, superintendent and their clerks,		3,475 67
Wages and salaries of all other persons employed in operating the road,		52,642 26
Provender,		17,404 18
Taxes, State and local,		1,876 91
Rent and tolls paid other companies for use of their roads:		256 68
Lowell & Dracut Street Railway Company,	$256 68	
Insurance,		555 84
Damages for injuries to persons and property,		147 26
Office expenses, and all other expenses not included above,		13,539 97
TOTAL EXPENSES OF OPERATING,		$97,302 70
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$11,248 73
Interest accrued during the year,		2,790 00
Dividends declared (6 per cent.) for the year,		6,000 00
Balance for the year, or surplus,		2,458 73
Surplus at commencement of year,		56,839 47
TOTAL SURPLUS SEPT. 30, 1888,		$59,298 20

*The item $27,022.62 includes track expense contracted previous to Oct. 1, 1887; also connection, switches, etc.

Inventory of Equipment Sept. 30, 1888.	
Box cars,	38
Open cars,	21
Horses,	203
Harnesses (pairs of),	44
Omnibuses,	2
Sleighs,	5
Other articles of equipment:	
Four ploughs, 1 leveller, 4 sleighs, 1 buggy, 1 wagon, 1 Democrat wagon, 1 sleigh, 1 hay-cutter, safe and office furniture.	
Largest number of horses owned at any time during the year,	203
Smallest number of horses owned at any time during the year,	180
Average number of horses owned during the year,	191

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$142,934 05
Equipment,	68,379 67
Land and buildings,	40,235 57
Cash and cash assets,	14,151 91
Total Assets,	$265,701 20
Liabilities.	
Capital stock,	$100,000 00
Funded debt,	50,000 00
Unfunded debt,	56,403 00
Surplus,	59,298 20
Total Liabilities,	$265,701 20

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$97,302 70
interest,	2,790 00
dividends,	6,000 00
Balance carried forward Sept. 30, 1888,	59,298 20
	$165,390 90
Cr.	
To balance Sept. 30, 1887,	$56,839 47
total income,	108,551 43
	$165,390 90

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	12.309 miles.
Aggregate length of switches, sidings, etc.,	1.288 "
Total length of track, measured as single track,	13.597 "
Weight of rail per yard, and description of rail: 28½, 33, 45, 48 and 54 pounds.	

Description of the several lines or routes owned or operated by the company:	
Walker Street to Livingston Street.	
Broadway and Walker Street, from Pawtucket Street to Prescott Street.	
Fletcher, Thorndike and Dutton streets.	
Nineteenth Street to Edson Cemetery.	
Fort Hill Park to Belmont Street.	
Plain Street to Westford Street.	
Length of railway belonging to other companies, measured as single track, not including sidings, etc., operated by this company, *or over which this company runs its cars*, with the description of same, ...	1.460 miles.
River Street to Prescott Street.	
High Street to Cabot Street.	
Prescott Street to Jackson Street.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . . .	13.769 "

MILES RUN, ETC.

Total number of miles run during the year, ...	403,598
Total number of passengers carried in the cars, . . .	2,146,922
Total number of round trips for the year, ...	42,708
Number of persons regularly employed by company, . .	117
Rates of fare, ...	5 cents.

LIST OF ACCIDENTS.

	From causes beyond their own control.		From their own misconduct or carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	-	-	1	-	1
Employees, ...	-	-	-	-	-	-

STATEMENT OF EACH ACCIDENT.

Aug. 6, 1888. — A passenger got off a car before it had come to a full stop; he was slightly injured.

PROPER ADDRESS OF THE COMPANY.

LOWELL HORSE RAILROAD COMPANY,
LOWELL, MASS.

NAME AND RESIDENCE OF OFFICERS.

Edward M. Tucke, *President*, Lowell, Mass. J. A. Chase, *Superintendent*, Lowell, Mass. Walter M. Sawyer, *Treasurer and Clerk of Corporation*, Lowell, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Edward M. Tucke, Lowell, Mass. Walter M. Sawyer, Lowell, Mass. Ethan A. Smith, Lowell, Mass. Thomas Costello, Lowell, Mass. Solomon Bachman, New York, N. Y.

EDWARD M. TUCKE,
W. M. SAWYER,
THOMAS COSTELLO,
ETHAN A. SMITH,
Directors.
W. M. SAWYER,
Treasurer.
J. A. CHASE,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. Nov. 5, 1888. Then personally appeared Edward M. Tucke, Walter M. Sawyer, Thomas Costello, J. A. Chase and Ethan A. Smith, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

J. N. MARSHALL,
Justice of the Peace.

REPORT

OF THE

LOWELL & DRACUT STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.

CAPITAL STOCK.

Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	60,000 00	
Capital stock paid (par value of shares, $100),		$60,000 00
Number of stockholders,	60	

DEBT.

Unfunded debt, as follows:		$87,250 00
Notes payable,	$86,800 00	
Dividend payable,	450 00	
TOTAL GROSS DEBT,		$87,250 00
Amount of cash assets, viz.:		92 53
Cash,	$92 53	
NET DEBT,		$87,157 47

PERMANENT INVESTMENTS.

RAILWAY.

Grading and paving and track, including timber, rails, etc., and laying,	$84,087 87	
Interest during construction, commissions, discounts, etc.,	3,876 03	
Engineering, agencies, salaries, and other expenses during construction,	3,891 19	
TOTAL COST OF CONSTRUCTION,		$91,855 09

EQUIPMENT.

Horses,	$15,669 00
Cars,	22,654 92
Other articles of equipment,	1,581 29
TOTAL COST OF EQUIPMENT,	$39,905 21

LAND AND BUILDINGS.

Land owned by company needed in operating road,	$2,308 90
Buildings owned by company needed in operating road,	16,046 19
TOTAL COST OF LAND AND BUILDINGS,	$18,355 09

OTHER PROPERTY.		
Land at Willow Dale,		$1,000 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$151,115 39
Cash assets,		92 53
TOTAL PROPERTY AND ASSETS OF COMPANY,		$151,207 92
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 810),*		$29,266 53
New horses (number, 22),		2,550 00
New cars (number, 11),		10,908 77
Other equipment,		1,273 99
Land and buildings,		11,118 77
TOTAL ADDITION TO PROPERTY,		$55,118 06
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$34,373 24
Received from other railways as tolls or rent:		256 68
Lowell Horse Railroad,	$256 68	
Received from sales of manure,		241 67
TOTAL EARNINGS,		$34,871 59
Income from other sources:		685 36
Sundries,	$341 36	
Rents,	344 00	
TOTAL INCOME FROM ALL SOURCES,		$35,556 95
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of cars and other vehicles, harness and horse-shoeing,		$1,846 51
Wages and salaries of president, treasurer, superintendent and their clerks,		406 59
Wages and salaries of all other persons employed in operating the road,		19,891 35
Provender,		7,761 22
Taxes, State and local,		240 29
Rent and tolls paid other companies for use of their roads:		158 42
Lowell Horse Railroad,	$158 42	
Insurance,		334 08
Damages for injuries to persons and property,		673 05
Office expenses, and all other expenses not included above,		3,109 78
TOTAL EXPENSES OF OPERATING,		$34,421 29
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$1,135 66
Dividends declared (3 per cent. on original stock $15,000 00),		450 00
Balance for the year, or surplus,		685 66
Surplus at commencement of year,		3,272 26
TOTAL SURPLUS SEPT. 30, 1888,		$3,957 92

* The item $29,266.53 was paid on track expense contracted previous to Oct. 1, 1887, for connections, relocation of tracks, side tracks, etc.

Inventory of Equipment Sept. 30, 1888.	
Box cars,	12
Open cars,	15
Horses,	100
Harnesses (pairs of),	30
Largest number of horses owned at any time during the year,	100
Smallest number of horses owned at any time during the year,	65
Average number of horses owned during the year,	83

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$91,855 09
Equipment,	39,905 21
Land and buildings,	18,355 09
Other property,	1,000 00
Cash and cash assets,	92 53
Total Assets,	$151,207 92

Liabilities.	
Capital stock,	$60,000 00
Unfunded debt,	87,250 00
Surplus,	3,957 92
Total Liabilities,	$151,207 92

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$34,421 29
dividends,	450 00
Balance carried forward Sept. 30, 1888,	3,957 92
	$38,829 21

Cr.	
By balance Sept. 30, 1887,	$3,272 26
total income,	35,556 95
	$38,829 21

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	8.314 miles.
Aggregate length of switches, sidings, etc.,	.679 "
Total length of track, measured as single track,	8.993 "
Weight of rail per yard, and description of rail: 35 and 60 pounds.	
Description of the several lines or routes operated by the company:	
From Fort Hill Park to Pawtucketville.	
From Navy Yard to Cemetery.	
From Fort Hill Park to Middlesex Street (Fayette Street Branch).	

From Fort Hill Park to Lawrence Street (Rogers Street Branch).	
From River Street to Merrimack Street (Aiken Street Branch).	
Length of railway belonging to other companies, measured as single track, not including sidings, etc., operated by this company, *or over which this company runs its cars*, with the description of same:	1.460 miles.
From High Street to Cabot Street.	
From River Street to Merrimack Street.	
From Merrimack Street to Jackson Street.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . .	9.774 "

MILES RUN, ETC.

Total number of miles run during the year, ...	196,859
Total number of passengers carried in the cars, . . .	724,379
Total number of round trips for the year, ...	37,080
Number of persons regularly employed by company, . .	54
Rates of fare, ...	3½, 4 & 5 cents.

LIST OF ACCIDENTS.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	-	1	-	1	-
Employees, ...	-	-	-	-	-	-
Others, ...	-	-	1	-	1	-

STATEMENT OF EACH ACCIDENT.

April 27, 1888. — An old man got off the front platform while the car was in motion; one wheel went over him. He died from the injury.

August 5. — A child ran directly into the horses, was run over, and died from the effects.

PROPER ADDRESS OF THE COMPANY.

LOWELL & DRACUT STREET RAILWAY COMPANY,
LOWELL, MASS.

NAME AND RESIDENCE OF OFFICERS.

August Fels, *President*, Lowell, Mass. J. A. Chase, *Superintendent*, Lowell, Mass. Percy Parker, *Treasurer and Clerk of Corporation*, Lowell, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

August Fels, Lowell, Mass. Percy Parker, Lowell, Mass. John Lennon, Lowell, Mass. Frank W. Howe, Lowell, Mass. Miles F. Brennan, Lowell, Mass. Stephen B. Puffer, Lowell, Mass. John F. Callahan, Lowell, Mass. (deceased).

AUGUST FELS,
MILES F. BRENNAN,
PERCY PARKER,
JOHN LENNON,
STEPHEN B. PUFFER,
Directors.

PERCY PARKER,
Treasurer.

J. A. CHASE,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. Nov. 5, 1888. Then personally appeared August Fels, Miles F. Brennan, Percy Parker, John Lennon, Stephen B. Puffer and James A. Chase, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

MARTIN L. HAMBLET,
Justice of the Peace.

REPORT

OF THE

LYNN & BOSTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$500,000 00	
Capital stock authorized by votes of company,*	400,000 00	
Capital stock paid (par value of shares, $100),		$400,000 00
Number of stockholders,	130	
DEBT.		
Funded debt, as follows:		$425,000 00
Mortgage bonds due May 15, 1900, rate of interest 6 per cent.,	$75,000 00	
Bonds due May 1, 1893, rate of interest 5 per cent.,	100,000 00	
Bonds due May 15, 1900, rate of interest 5 per cent.,	100,000 00	
Bonds due May 15, 1900, rate of interest 5 per cent.,	50,000 00	
Bonds due April 1, 1907, rate of interest 5 per cent.,	100,000 00	
Unfunded debt, as follows:		57,972 44
Sundry bills payable,	$46,050 39	
Tickets outstanding,	11,922 05	
TOTAL GROSS DEBT,		$482,972 44
Amount of cash assets, viz.:		41,168 48
Cash,	$21,086 91	
Supplies,	14,195 92	
Debit balances,	5,885 65	
NET DEBT,		$441,803 96
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$495,082 22	
Other railways, purchased for,	15,409 27	
TOTAL COST OF CONSTRUCTION,		$510,491 49

* Was increased $100,000 June 4, 1888.

EQUIPMENT.		
Horses,		$84,000 00
Cars,		103,500 00
Other articles of equipment,		30,657 10
TOTAL COST OF EQUIPMENT,		$218,157 10
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$172,875 99
TOTAL COST OF LAND AND BUILDINGS,		$172,875 99
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$901,524 58
Cash assets,		41,168 48
TOTAL PROPERTY AND ASSETS OF COMPANY,		$942,693 06
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 15,532.2),		$29,820 68
New horses (number, 49),		4,900 00
New cars (number, 21),		9,800 00
Other equipment,		863 98
Land and buildings,		21,220 32
TOTAL ADDITION TO PROPERTY,		$66,604 98
Property sold or reduced in valuation on the books, viz.:		125 00
One old car and 1 old sleigh,	$125 00	
NET ADDITION TO PROPERTY FOR THE YEAR,		$66,479 98
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$484,293 67
Received from other railways as tolls or rent:		1,039 74
Naumkeag Street Railway Company,	$376 40	
West End Street Railway Company,	336 03	
East Middlesex Street Railway Company,	255 89	
Metropolitan Railroad Company,	71 42	
Received from sales of manure,		3,193 31
TOTAL EARNINGS,		$488,526 72
Income from other sources:		1,555 00
Advertising in cars,	$1,555 00	
TOTAL INCOME FROM ALL SOURCES,		$490,081 72
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$26,370 95
Repairs of cars and other vehicles, harness and horse-shoeing,		39,974 57
Repairs of buildings,		1,732 36
Renewal of horses,		19,187 52
Wages and salaries of president, treasurer, superintendent and their clerks,		13,399 54
Wages and salaries of all other persons employed in operating the road,		199,423 72
Provender,		72,887 37
Taxes, State and local,		7,319 07

Rent and tolls paid other companies for use of their roads:		$24,066 14
Boston & Chelsea Railroad Company,	$9,213 91	
West End Street Railway Company,	8,863 97	
Winnisimmet Railroad Company,	4,315 30	
Middlesex Railroad Company,	1,636 48	
Metropolitan Railroad Company,	36 48	
Insurance,		3,652 06
Damages for injuries to persons and property,		5,178 44
Office expenses, and all other expenses not included above,		21,569 01
TOTAL EXPENSES OF OPERATING,		$434,760 75

NET INCOME, DIVIDENDS, ETC.

TOTAL NET INCOME ABOVE OPERATING EXPENSES,	$55,320 97
Interest accrued during the year,	25,253 26
Dividends declared (8 per cent.) for the year,*	24,000 00
Balance for the year, or surplus,	6,067 71
Surplus at commencement of year,	53,652 91
TOTAL SURPLUS SEPT. 30, 1888,	$59,720 62

INVENTORY OF EQUIPMENT SEPT. 30, 1888.

Box cars,	97
Open cars,	118
Horses,	840
Harnesses (pairs of),	234
Sleighs,	7
Other articles of equipment: Twenty-two snow-ploughs, 19 snow-sleds, 10 snow-levellers, buggies, wagons, gravel-car, watering-car, steam engine and boilers, machinery and piping in repair shop, tools for wood, paint and blacksmith shops and track repairs, horse-collars, blankets, surcingles, halters, tip-carts, light harnesses, stable and office furniture, telephone line, etc.	
Largest number of horses owned at any time during the year,	860
Smallest number of horses owned at any time during the year,	791
Average number of horses owned during the year,	820

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$510,491 49
Equipment,	218,157 10
Land and buildings,	172,875 99
Cash and cash assets,	41,168 48
TOTAL ASSETS,	$942,693 06

LIABILITIES.

Capital stock,	$400,000 00
Funded debt,	425,000 00
Unfunded debt,	57,972 44
Surplus,	59,720 62
TOTAL LIABILITIES,	$942,693 06

* On $300,000 capital stock.

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$434,760 75
interest,	25,253 26
dividends,	24,000 00
Balance carried forward Sept. 30, 1888,	59,720 62
	$543,734 63
Cr.	
By balance Sept. 30, 1887,	$53,652 91
total income,	490,081 72
	$543,734 63

Description of Railway.

Length of railway owned by company, measured as a single track, exclusive of sidings,	45.1349 miles.
Aggregate length of switches, sidings, etc.,	3.1150 "
Total length of track measured as single track,	48.2499 "
Total length of track paved,	35.4367 "
Weight of rail per yard, and description of rail: street rail, 35 to 48 pounds; T, 28 to 40 pounds.	
Description of the several lines or routes operated by the company:	
West Lynn and Marblehead; West Lynn and Swampscott; Swampscott, Lynn and Boston; Upper Swampscott, East Saugus and Saugus Centre; Upper Swampscott, East Saugus and Cliftondale; Myrtle Street and Central Square; Myrtle Street and Glenmere; Wyoma and Central Square; Peabody and Lynn; Central Square and Nahant Beach (in summer); Lynn Highlands and Market Street; Revere and Boston; 2 lines to Revere Beach and 1 at Beach (in summer); Beachmont and Boston; Boston and Chelsea, via Broadway; Boston and Chelsea, via Washington Avenue (and to Woodlawn Cemetery in summer); Everett and Chelsea.	
Length of railway belonging to other companies, measured as single track, not including sidings, etc., operated by this company, *or over which this company runs its cars*, with the description of same:	9.9270 miles.
Boston & Chelsea Railroad, 4.354 miles.	
West End Street Railway, 3.463 "	
Winnisimmet Railroad, 1.883 "	
Naumkeag Street Railway, .227 "	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	55.0610 miles.

Miles Run, etc.

Total number of miles run during the year,	1,539,479
Total number of passengers carried in the cars,	9,286,034
Total number of round trips for the year,	177,946
Number of persons regularly employed by company,	348
Rates of fare,	5 to 15 cents.

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carlessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	2	1	8	1	10
Employees, ...	-	-	-	-	-	-
Others, ...	-	-	-	1	-	1

Statement of Each Accident.*

Oct. 17, 1887. — A man stepped from moving car on curve; fell, and claims to be injured.

November 5. — Man somewhat under influence of liquor stepped from front end of car, fell, and had ankle injured.

November 14. — A car left the rails over section of track undergoing repairs, whereby a woman was thrown from her seat and claimed to be injured.

December 22. — Man suddenly ran from sidewalk and attempted to jump on front end of car then passing; slipped and fell to ground; more or less injured.

Jan. 12, 1888. — Lady stepped backwards from moving car; fell and hurt her head.

February 4. — A man either stepped or fell from front platform of moving car, and received cut on leg from car wheel.

March 9. — A man under the influence of liquor got on front platform of car, and after riding a short distance, and just as another car was passing, either jumped or fell against the passing car and was thrown under the wheels of his car, and one wheel passed over him, killing him.

March 19. — A man fell from front platform of moving car, pulling his friend with him; the second man received cut on head and had his hand crushed.

April 15. — Young man attempted to jump from front end of a moving car to front end of a car passing in opposite direction; fell, and received injury to his foot.

April 19. — A man jumped from front end of moving car, fell, and wheel ran over his arm, which was subsequently amputated at hospital.

June 24. — A lady jumped from an open car in motion, fell, and received a compound fracture of the leg.

July 4. — A lady stepped from moving car, fell, and injured her back.

Proper Address of the Company.

LYNN & BOSTON RAILROAD COMPANY,

13 Tremont Row, Room 2, Boston, Mass.

* During the year other accidents (not enumerated above) have occurred, mostly caused by persons attempting to take or leave the cars before they could be stopped; in such cases the injuries were either very slight or none at all.

NAME AND RESIDENCE OF OFFICERS.

Amos F. Breed, *President*, Lynn, Mass. Elwin C. Foster, *Superintendent*, Revere, Mass. E. Francis Oliver, *Treasurer and Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Amos F. Breed, Lynn, Mass. Aza A. Breed, Lynn, Mass. Philip A. Chase, Lynn, Mass. Isaac Stebbins,* Chelsea, Mass. William R. Pearmain, Chelsea, Mass. William Sprague, Boston, Mass. John Reed, Boston, Mass. Thomas P. Proctor, Boston, Mass. E. Francis Oliver, Boston, Mass.

AMOS F. BREED,
PHILIP A. CHASE,
WM. SPRAGUE,
AZA A. BREED,
WM. R. PEARMAIN,
E. FRANCIS OLIVER,
Directors.
E. FRANCIS OLIVER,
Treasurer.
ELWIN C. FOSTER,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 7, 1888. Then personally appeared Amos F. Breed, Philip A. Chase, William Sprague, Aza A. Breed, William R. Pearmain, E. Francis Oliver and Elwin C. Foster, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

THOS. P. PROCTOR,
Justice of the Peace.

* Deceased June 21, 1888.

REPORT

OF THE

MARLBOROUGH STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[In process of construction.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$50,000 00	
Capital stock authorized by votes of company,	26,000 00	
Capital stock paid (par value of shares, $100),		$13,000 00
Number of stockholders,	6	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$2,620 32
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$2,620 32
Cash assets,		10,379 68
TOTAL PROPERTY AND ASSETS OF COMPANY,		$13,000 00

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$2,620 32
Cash and cash assets,	10,379 68
TOTAL ASSETS,	$13,000 00
LIABILITIES.	
Capital stock,	$13,000 00
TOTAL LIABILITIES,	$13,000 00

PROPER ADDRESS OF THE COMPANY.

MARLBOROUGH STREET RAILWAY COMPANY,
MARLBOROUGH, MASS.

NAME AND RESIDENCE OF OFFICERS.

Samuel Boyd, *President*, Marlborough, Mass. Samuel C. Darling, *Treasurer and Clerk of Corporation*, Somerville, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Samuel Boyd, Marlborough, Mass. Timothy A. Coolidge, Marlborough, Mass. Stillman B. Pratt, Marlborough, Mass. Albe C. Weeks, Marlborough, Mass. James T. Murphy, Marlborough, Mass. Samuel C. Darling, Somerville, Mass.

SAMUEL BOYD,
TIMOTHY A. COOLIDGE,
STILLMAN B. PRATT,
ALBE C. WEEKS,
JAMES T. MURPHY,
SAMUEL C. DARLING,
Directors.
SAMUEL C. DARLING,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. Nov. 23, 1888. Then personally appeared Samuel Boyd, Timothy A. Coolidge, Stillman B. Pratt, Albe C. Weeks, James T. Murphy and Samuel C. Darling, and severally made oath to the truth of the fore going statement by them subscribed, according to their best knowledge and belief.

JOHN J. SHAUGHNESSY,
Justice of the Peace.

REPORT

OF THE

MALDEN & MELROSE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[Operated by the West End Street Railway Company. A statement of the doings of the road has been demanded of the West End Company, in accordance with the statute, but no return has been received.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$200,000 00	
Capital stock authorized by votes of company,	169,500 00	
Capital stock paid (par value of shares, $100),		$165,500 00
Number of stockholders,	51	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$165,500 00
TOTAL PROPERTY AND ASSETS OF COMPANY,		165,500 00
General Balance Sheet Sept. 30, 1888.		
ASSETS.		
Construction,		$165,500 00
TOTAL ASSETS,		$165,500 00
LIABILITIES.		
Capital stock,		$165,500 00
TOTAL LIABILITIES,		$165,500 00
DESCRIPTION OF RAILWAY.		
Length of railway owned by company, measured as a single track, exclusive of sidings,		6.287 miles.
Aggregate length of switches, sidings, etc.,		.473 "
Total length of track, measured as single track,		6.760 "

PROPER ADDRESS OF THE COMPANY.

MALDEN & MELROSE RAILROAD COMPANY
(Care CHARLES E. POWERS, *President*),
27 TREMONT ROW, BOSTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

Charles E. Powers, *President and Treasurer*, Boston, Mass. James H. McFarland, *Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles E. Powers, Boston, Mass. Linus M. Child, Boston, Mass. Marcellus Coggan, Malden, Mass. John H. Studley, Boston, Mass. Henry H. Whitney, Brookline, Mass.

CHAS. E. POWERS,
LINUS M. CHILD,
JOHN H. STUDLEY,
MARCELLUS COGGAN,
Directors.
CHAS. E. POWERS,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 6, 1888. Then personally appeared Chas. E. Powers, Linus M. Child, John H. Studley and Marcellus Coggan, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

S. E. SEWALL,
Justice of the Peace.

REPORT

OF THE

MERRIMACK VALLEY HORSE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$80,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock paid (par value of shares, $100),		$50,000 00
Number of stockholders,	31	
DEBT.		
Unfunded debt, as follows:		$2,833 63
Notes payable,	$2,000 00	
Accounts,	833 63	
TOTAL GROSS DEBT,		$2,833 63
Amount of cash assets, viz.:		500 00
Supplies,	$500 00	
NET DEBT,		$2,333 63
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving,	$2,000 00	
Track, including timber, rails, etc., and laying,	28,000 00	
TOTAL COST OF CONSTRUCTION,		$30,000 00
EQUIPMENT.		
Horses,		$7,500 00
Cars,		10,400 00
Other articles of equipment,		600 00
TOTAL COST OF EQUIPMENT,		$18,500 00
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$19,300 00
Buildings owned by company needed in operating road,		16,300 00
TOTAL COST OF LAND AND BUILDINGS,		$35,600 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$84,100 00
Cash assets,		500 00
TOTAL PROPERTY AND ASSETS OF COMPANY,		$84,600 00

Revenue for the Year.		
Received from passengers on railways operated by this company,		$61,403 01
Received from sales of manure,		640 64
Total Earnings,		$62,043 65
Income from other sources:		200 04
Rent of office,	$200 04	
Total Income from all Sources,		$62,243 69
Expenses of Operating the Railway for the Year.		
Repairs of road-bed and track,		$3,253 84
Repairs of cars and other vehicles, harness and horse-shoeing,		4,308 63
Repairs of buildings,		401 46
Renewal of horses,		1,190 00
Wages and salaries of president, treasurer, superintendent and their clerks,		2,000 00
Wages and salaries of all other persons employed in operating the road,		25,099 71
Provender,		11,691 11
Taxes, State and local,		1,522 54
Office expenses, and all other expenses not included above,		1,383 67
Total Expenses of Operating,		$50,850 96
Net Income, Dividends, etc.		
Total Net Income above Operating Expenses,		$11,392 73
Interest accrued during the year,		664 36
Dividends declared (8 per cent.) for the year,		4,000 00
Balance for the year, or surplus,		6,728 37
Surplus at commencement of year,		25,038 00
Total Surplus Sept. 30, 1888,		31,766 37
Inventory of Equipment Sept. 30, 1888.		
Box cars,		16
Open cars,		11
Horses,		106
Harnesses (pairs of),		20
Sleighs,		4
Other articles of equipment:		
Two ploughs, 2 safes, 2 carts, 2 wagons, tools.		
Largest number of horses owned at any time during the year,		119
Smallest number of horses owned at any time during the year,		103
Average number of horses owned during the year,		112

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$30,000 00
Equipment,	18,500 00
Land and buildings,	35,600 00
Cash and cash assets,	500 00
Total Assets,	$84,600 00
Liabilities.	
Capital stock,	$50,000 00
Unfunded debt,	2,833 63
Surplus,	31,766 37
Total Liabilities,	$84,600 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.	
Dr.	
To expenses,	$50,850 69
interest,	664 36
dividends,	4,000 00
Balance carried forward Sept. 30, 1888,	31,766 37
	$87,281 69
Cr.	
By balance Sept. 30, 1887,	$25,038 00
total income,	62,243 69
	$87,281 69

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	7.55 miles.
Aggregate length of switches, sidings, etc.,	.90 "
Total length of track, measured as single track,	8.45 "
Total length of track paved,	2.60 "
Weight of rail per yard, and description of rail: One-half mile of T rail, 30 pounds to the yard; eight-tenths of a mile of street rail, 45 pounds to the yard; and the balance of street rail, 48 pounds to the yard.	
Description of the several lines or routes operated by the company:	
Extends from Methuen, through Lawrence to North Andover; from Merrimack Street, through Union, Andover and Broadway to Essex Street; from Essex, through Newbury, East Haverhill and Berkley streets to Jackson Street; from Union, down Canal Street to the paper mills.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	7.55 miles.

Miles Run, etc.	
Total number of miles run during the year,	251,865
Total number of passengers carried in the cars,	1,187,862
Total number of round trips for the year,	55,970
Number of persons regularly employed by company,	45
Rates of fare: Only 5 cents cash fare; go anywhere on the road.	

Proper Address of the Company.

MERRIMACK VALLEY HORSE RAILROAD COMPANY,

Lawrence, Mass.

Name and Residence of Officers.

Wm. A. Russell, *President*, Lawrence, Mass. Amory N. Kimball, *Superintendent*, Lawrence, Mass. James H. Eaton, *Treasurer and Clerk of Corporation*, Lawrence, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Wm. A. Russell, Lawrence, Mass. A. W. Stearns, Lawrence, Mass. Hezekiah Plummer, Lawrence, Mass. James Walton, Methuen, Mass. John A. Wiley, North Andover, Mass.

A. W. STEARNS,
JAMES WALTON,
H. PLUMMER,
JOHN A. WILEY,
Directors.
JAMES H. EATON,
Treasurer.
A. N. KIMBALL,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Oct. 26, 1888. Then personally appeared A. W. Stearns, James Walton, H. Plummer and John A. Wiley, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

HERBERT W. FIELD,
Justice of the Peace.

REPORT

OF THE

METROPOLITAN STREET RAILWAY COMPANY,

FOR THE PERIOD ENDING NOVEMBER 12, 1887.

[This company was consolidated with the West End Street Railway Company Nov. 12, 1887, under the authority of chapter 413 of the Acts of 1887.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$2,000,000 00	
Capital stock authorized by votes of company,	2,000,000 00	
Capital stock paid (par value of shares, $50),		$2,000,000 00
Number of stockholders,	12	
DEBT.		
Funded debt, as follows:		$1,457,442 12
Bonds due 1897, rate of interest 6 per cent.,	$500,000 00	
Bonds due 1903, rate of interest 5 per cent.,	500,000 00	
Mortgage notes,	457,442 12	
Unfunded debt, as follows:		148,212 39
Demand note,	$25,000 00	
Taxes, 1887,	75,370 60	
Interest and coupons,	24,855 84	
Sundry accounts,	22,985 95	
TOTAL GROSS DEBT,		$1,605,654 51
Amount of cash assets, viz.:		172,133 71
Cash,	$87,552 15	
Supplies,	31,362 33	
Debit balances,	53,219 23	
NET DEBT,		$1,433,520 80
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying, and interest during construction, commissions, discounts, etc., Engineering, agencies, salaries, and other expenses during construction,	$1,328,126 46	
Other railways (original cost unknown), purchased for,	420,558 65	
TOTAL COST OF CONSTRUCTION,		$1,748,685 11

EQUIPMENT.		
Horses,		$445,590 00
Cars,		470,491 50
Other articles of equipment,		118,980 25
TOTAL COST OF EQUIPMENT,		$1,035,061 75
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$1,220,586 88
OTHER PROPERTY.		
Real estate, Huntington Avenue,	$175,000 00	
Real estate, Washington and Bartlett streets,	100,000 00	
Real estate, Dunlow Street,	20,000 00	
Real estate, Camden Street,	55,000 00	
		$350,000 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$4,354,333 74
Cash assets,		172,133 71
TOTAL PROPERTY AND ASSETS OF COMPANY,		$4,526,467 45
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE PERIOD.		
Extension of tracks,		$6,263 88
Land and buildings,		2,588 36
TOTAL ADDITION TO PROPERTY,		$8,852 24
Property sold or reduced in valuation on the books, viz.:		
Two cars sold,		450 00
NET ADDITION TO PROPERTY FOR THE PERIOD,		$8,402 24
REVENUE TO NOV. 12, 1887.		
Received from passengers on railways operated by this company,		$280,416 74
Received from other railways as tolls or rent,		3,401 58
Received from sales of manure,		593 60
TOTAL EARNINGS,		$284,411 92
Income from other sources:		1,152 30
Advertising, rents, etc.,	$1,152 30	
TOTAL INCOME FROM ALL SOURCES,		$285,564 22
EXPENSES OF OPERATING THE RAILWAY TO NOV. 12, 1887.		
Repairs of road-bed and track,		$12,051 58
Repairs of cars and other vehicles, harness and horse-shoeing,		20,022 58
Repairs of buildings,		4,214 99
Renewal of horses,		11,201 00
Wages and salaries of president, treasurer, superintendent and their clerks,		100,315 33
Wages and salaries of all other persons employed in operating the road,		2,966 65
Provender,		32,716 38
Taxes, State and local,		5,400 00
Rent and tolls paid other companies for use of their roads,		704 22
Insurance,		1,000 00

Damages for injuries to persons and property,		$5,358 36
Office expenses, and all other expenses not included above,		6,590 29
TOTAL EXPENSES OF OPERATING,		$202,541 38
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$83,022 84
Interest accrued during the year,		7,900 00
Balance for the year, or surplus,		75,122 84
Surplus at commencement of year,	$841,970 15	
Add:		
Amount of contingent fund,	3,719 95	
Surplus at commencement of year, as changed by aforesaid entries,		845,690 10
TOTAL SURPLUS NOV. 12, 1887,		$920,812 94

General Balance Sheet Nov. 12, 1887.

ASSETS.	
Construction,	$1,748,685 11
Equipment,	1,035,061 75
Land and buildings,	1,220,586 88
Other property,	350,000 00
Cash and cash assets,	172,133 71
TOTAL ASSETS,	$4,526,467 45
LIABILITIES.	
Capital stock,	$2,000,000 00
Funded debt,	1,457,442 12
Unfunded debt,	148,212 39
Surplus,	920,812 94
TOTAL LIABILITIES,	$4,526,467 45

General Balance Sheet as changed by Subsequent Entries made in Profit and Loss Account to adjust Accounts, with Inventories and Entries made as of Date of Transfer to the West End Street Railway Company.

ASSETS.	
Construction,	$1,748,685 11
Horses,	406,180 10
Cars,	361,904 00
Equipment,	118,980 25
Lands and buildings,	1,220,586 88
Other property,	350,000 00
Cash and cash assets,	171,518 07
TOTAL ASSETS,	$4,377,854 41
LIABILITIES.	
Capital stock,	$2,000,000 00
Funded debt,	1,457,442 12
Unfunded debt,	148,212 39
Bills and accounts outstanding Nov. 12, 1887, less value of materials found to be on hand,	39,255 44
Surplus,	732,944 46
TOTAL LIABILITIES,	$4,377,854 41

Copy of Profit and Loss Account to Nov. 12, 1887.

Dr.

To expenses,	$202,541 38
interest,	7,900 00
balance carried forward,	920,812 94
	$1,131,254 32

Cr.

By balance Sept. 30, 1887,	$841,970 15
total income,	285,564 22
amount standing to the credit of contingent fund,	3,719 95
	$1,131,254 32

Subsequent Entries made to adjust Accounts, with Inventories and Entries made as of Date of Transfer to the West End Street Railway Company.

Dr.

To 109 box and 25 open cars, condemned as worthless,	$108,587 50
reduction in value of horses as shown on the books, to correspond with inventory value of same,	39,409 90
uncollectible accounts,	615 64
outstanding bills and unsettled claims, not entered upon the books at date of transfer, less value of materials found to be on hand,	39,255 44
Balance carried forward as of Nov. 12, 1887,	732,944 46
	$920,812 94

Cr.

By balance brought down,	$920,812 94
	$920,812 94

Miles Run, etc., to Nov. 12, 1887.

Total number of miles run,	943,439
Total number of passengers carried in the cars,	5,706,293
Total number of round trips,	146,611
Number of persons regularly employed by company,	2,000
Rates of fare,	5 cents.

List of Accidents.

	From Causes beyond their own Control		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	–	4	1	1	1	5
Employees,	–	1	–	–	–	1
Others,	–	7	–	1	–	8

STATEMENT OF EACH ACCIDENT.

Oct. 2, 1887. — Man jammed between two cars.
October 3. — Car struck a man and knocked him into an excavation in the street.
October 4. — A woman's neck cut by glass broken by a horse.
October 7. — Man getting on car struck by a team.
October 8. — Woman crossing the street knocked down by horses.
October 8. — Man thrown from wagon by collision with car.
October 9. — Woman fell getting off car.
October 12. — Man struck by car.
October 22. — Two men thrown from team by collision with car.
October 26. — Two boys thrown from team by collision with car.
October 28. — Woman thrown down in car.
October 31. — A hostler kicked by a horse in Bartlett Street stable.
November 2. — Man fell off car and was run over, and died from his injuries.
November 6. — Woman fell getting off car.
November 7. — Man struck by car.

PROPER ADDRESS OF THE COMPANY.

METROPOLITAN STREET RAILWAY COMPANY,
81 MILK STREET, BOSTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

Jarvis D. Braman, *President*, Boston, Mass. Grenville D. Braman, *Treasurer*, Boston, Mass. Elmer P. Howe, *Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Jarvis D. Braman, Boston, Mass. Grenville D. Braman, Boston, Mass. M. F. Dickinson, Jr., Boston, Mass. Elmer P. Howe, Boston, Mass. Henry D. Hyde, Boston, Mass. N. W. Jordan, Boston, Mass. Asa P. Potter, Cohasset, Mass. Henry M. Whitney, Brookline, Mass.

ASA P. POTTER,
GRENVILLE D. BRAMAN,
HENRY M. WHITNEY,
HENRY D. HYDE,
ELMER P. HOWE,
Directors.

GRENVILLE D. BRAMAN,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 14, 1888. Then personally appeared said Asa P. Potter, Grenville D. Braman, Henry M. Whitney, Henry D. Hyde and Elmer P. Howe, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

Before me,

PRENTISS CUMMINGS,
Justice of the Peace.

REPORT

OF THE

NAUMKEAG STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$250,000 00	
Capital stock authorized by votes of company,	250,000 00	
Capital stock paid (par value of shares, $100),		$250,000 00
Number of stockholders,	59	
DEBT.		
Funded debt, as follows:		$300,600 00
Mortgage bonds due 1885, rate of interest 6 per cent.,	$600 00	
Bonds due 1895, rate of interest 6 per cent.,	50,000 00	
Mortgage bonds due 1906, rate of interest 5 per cent.,	250,000 00	
Unfunded debt, as follows:		267,674 79
Coupons unpaid,	$310 00	
Tickets outstanding,	837 18	
Debit balances,	266,527 61	
TOTAL GROSS DEBT,		$568,274 79
Amount of cash assets, viz.:		127,233 76
Cash,	$11,012 41	
Supplies,	18,682 76	
Sinking fund,	50,500 00	
Debit balances,	47,038 59	
NET DEBT,		$441,041 03
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$136,595 33	
Other railways:		
Salem & Danvers Street Railway Company (original cost, $131,730.88), purchased for	203,556 00	
Salem Street Railway (original cost, $208,853.36), purchased for	160,754 08	
TOTAL COST OF CONSTRUCTION,		$500,905 41

EQUIPMENT.		
Horses,		$35,800 00
Cars,		60,520 00
Other articles of equipment,		35,195 92
TOTAL COST OF EQUIPMENT,		$131,515 92
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$22,100 07
Buildings owned by company needed in operating road,		71,354 79
TOTAL COST OF LAND AND BUILDINGS,		$93,454 86
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$725,876 19
Cash assets,		127,233 76
TOTAL PROPERTY AND ASSETS OF COMPANY,		$853,109 95
Amount of sinking fund in hands of trustees,	$50,500 00	
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 13,425),		$27,102 93
Other equipment,		9,715 01
Land and buildings,		2,634 73
TOTAL ADDITION TO PROPERTY,		$39,452 67
Property sold or reduced in valuation on the books, viz.:		625 00
Five horses died, valued at $125.00,	$625 00	
NET ADDITION TO PROPERTY FOR THE YEAR,		$38,827 67
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$201,194 45
Received from sales of manure,		2,012 65
TOTAL EARNINGS,		$203,207 10
Income from other sources,		849 74
Advertising in cars,	$849 74	
TOTAL INCOME FROM ALL SOURCES,		$204,056 84
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$3,845 81
Repairs of cars and other vehicles, harness and horse-shoeing,		10,171 91
Repairs of buildings,		765 17
Renewal of horses,		8,037 00
Wages and salaries of president, treasurer, superintendent and their clerks,		1,892 13
Wages and salaries of all other persons employed in operating the road,		73,618 90
Provender,		32,059 32
Taxes, State and local,		7,503 83
Rent and tolls paid other companies for use of their roads:		376 40
Lynn & Boston Railroad Company,	$376 40	
Insurance,		2,390 88
Damages for injuries to persons and property,		6,172 00
Office expenses, and all other expenses not included above,		8,750 22
TOTAL EXPENSES OF OPERATING,		$160,583 57

NET INCOME, DIVIDENDS, ETC.	
TOTAL NET INCOME ABOVE OPERATING EXPENSES,	$43,473 27
Interest accrued during the year,	23,223 09
Dividends declared (8 per cent) for the year,	20,000 00
Balance for the year, or surplus,	250 18
Surplus at commencement of year,	34,584 98
TOTAL SURPLUS SEPT. 30, 1888,	$34,835 16
INVENTORY OF EQUIPMENT SEPT. 30, 1888.	
Box cars,	56
Open cars,	51
Horses,	358
Harnesses (pairs of),	170
Omnibuses,	7
Sleighs,	16
Other articles of equipment:	
Two carryalls, 3 Concord wagons, 4 express wagons, 4 tip-carts, 2 buggies, 3 sleighs, 6 pungs, 2 bogies, 6 wheelbarrows, 4 snow-levellers, 6 snow-ploughs, 1 sweeper, 3 boilers, 1 engine, 2 dynamos, 12 electric motors, 3 hay-scales, 5 hay-cutters, 3 safes, 36 car stoves, tools, clocks and other miscellaneous articles.	
Largest number of horses owned at any time during the year,	360
Smallest number of horses owned at any time during the year,	358
Average number of horses owned during the year,	359

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$500,905 41
Equipment,	131,516 92
Land and buildings,	93,454 86
Cash and cash assets,	127,233 76
TOTAL ASSETS,	$853,109 95
LIABILITIES.	
Capital stock,	$250,000 00
Funded debt,	300,600 00
Unfunded debt,	267,674 79
Surplus,	34,835 16
TOTAL LIABILITIES,	$853,109 95

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.	
To expenses,	$160,583 57
interest,	23,223 09
dividends,	20,000 00
Balance carried forward Sept. 30, 1888,	34,835 16
	$238,641 82
CR.	
By balance Sept. 30, 1887,	$34,584 98
total income,	204,056 84
	$238,641 82

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	33.360 miles.
Aggregate length of switches, sidings, etc.,	3.849 "
Total length of track, measured as single track,	37.209 "
Total length of track paved,	26.000 "
Weight of rail per yard, and description of rail: 35 pounds T, 47 pounds tram.	
Description of the several lines or routes operated by the company:	
Main line from corner of Endicott and Lowell streets, in Peabody, through Peabody, Salem, Beverly, North Beverly and Wenham, to a point in Hamilton called Asbury Grove Camp Ground, with double track from Peabody Square to a point on Boston Street, in Salem, nearly opposite Hanson Street; and from Fowler Street to North Street, in Salem, with six turnouts in Salem, eight turnouts in Beverly, four turnouts in Wenham, and two in Hamilton, with branches as follows: From Danvers Centre, through Danvers and Salem to junction of Lynn and Marblehead roads in Marblehead; from terminus of Lynn & Boston Railroad Company's track, on Pleasant Street, to Front Street, in Marblehead; from Asylum station, in Danvers, to Danvers Square; from Putnamville to Peabody Square; from junction of Cabot and Knowlton streets, in Beverly, to Chapman's Corner; and from junction of Washington Square and Essex Street to the Willows, in Salem.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	33.360 miles.
Miles Run, etc.	
Total number of miles run during the year,	567,877
Total number of passengers carried in the cars,	3,950,275
Total number of round trips for the year,	85,215
Number of persons regularly employed by company,	150
Rates of fare: 4 1.6, 5, 6¼, 7, 8⅓ and 10 cents.	

List of Accidents.

	From causes beyond their own control.		From their own misconduct or carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	5	-	5
Employees,	-	1	-	-	-	1
Others,	-	-	-	-	-	-

Statement of Each Accident.

March 20, 1888. — Intoxicated man fell from the front platform of a car; the rear wheels of the car passed over his leg, crushing it.

April 5. — Collision between two cars; an employee slightly injured.

May 7. — A man, in attempting to board a moving car, was thrown to the ground and slightly injured.

June 23. — A woman left a moving car, and was thrown to the ground and slightly injured.

August 16. — A woman left a moving car, and was slightly injured.

September 26. — A man fell from the front platform of a car, and was run over, crushing his leg.

PROPER ADDRESS OF THE COMPANY.

NAUMKEAG STREET RAILWAY COMPANY,
233 ESSEX STREET, SALEM, MASS.

NAME AND RESIDENCE OF OFFICERS.

Charles Odell, *President*, Salem, Mass. Willard B. Ferguson, *Superintendent*, Salem, Mass. Henry Wheatland, *Treasurer*, Salem, Mass. Joseph F. Hickey, *Clerk of Corporation*, Salem, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles Odell, Salem, Mass. William Mack, Salem, Mass. Henry Wheatland, Salem, Mass. Nathan Nichols, Salem, Mass. John M. Anderson, Salem, Mass. Charles C. G. Thornton, Boston, Mass. Rufus H. Brown, Peabody, Mass.

CHARLES ODELL,
WILLIAM MACK,
HENRY WHEATLAND,
N. NICHOLS,
CHARLES C. G. THORNTON,
JOHN M. ANDERSON,
RUFUS H. BROWN,
Directors.

HENRY WHEATLAND,
Treasurer.

WILLARD B. FERGUSON,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. SALEM, Nov. 5, 1888. Then personally appeared Charles Odell, William Mack, Henry Wheatland, Nathan Nichols (who affirms), Charles C. G. Thornton, John M. Anderson, Rufus H. Brown and Willard B. Ferguson, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHARLES H. ODELL,
Justice of the Peace.

REPORT

OF THE

NATICK & COCHITUATE STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.

Capital Stock.

Capital stock authorized by charter,	$25,000 00	
Capital stock authorized by votes of company,	25,000 00	
Capital stock paid (par value of shares, $100),		$25,000 00
Number of stockholders,	54	

Debt.

Unfunded debt as follows:		$410 10
Tickets unredeemed,	$410 10	
Total Gross Debt,		$410 10
Amount of cash assets, viz.:		1,424 33
Cash,	$1,424 33	

Permanent Investments.

Railway.

Grading and paving and track, including timber, rails, etc., and laying,	$20,875 00	
Engineering, agencies, salaries and other expenses during construction,	675 00	
Total Cost of Construction,		$21,550 00

Equipment.

Horses,	$2,042 50
Cars,	4,400 00
Other articles of equipment,	700 00
Total Cost of Equipment,	$7,142 50

Land and Buildings.

Land owned by company needed in operating road,	$1,000 00
Buildings owned by company needed in operating road,	3,000 00
Total Cost of Land and Buildings,	$4,000 00

TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$32,692 50
Cash assets,		1,424 33
TOTAL PROPERTY AND ASSETS OF COMPANY,		$34,116 83
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
New horses (number, 2),		$242 50
TOTAL ADDITION TO PROPERTY,		$242 50
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$14,946 75
Received from mails and express,		423 13
TOTAL EARNINGS,		$15,369 88
Income from other sources:		244 08
Use of coaches,	$210 58	
Advertising,	22 00	
Sale of loam,	11 50	
TOTAL INCOME FROM ALL SOURCES,		$15,613 96
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$2,580 62
Renewal of horses,		340 50
Wages and salaries of president, treasurer, superintendent and their clerks,		1,100 00
Wages and salaries of all other persons employed in operating the road,		3,699 37
Provender,		2,579 81
Taxes, State and local,		461 56
Insurance,		138 00
Office expenses, and all other expenses not included above,		352 29
TOTAL EXPENSES OF OPERATING,		$11,252 15
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$4,361 81
Interest accrued during the year,		56 35
Dividends declared (6 per cent.) for the year,		1,500 00
Balance for the year, or surplus,		2,805 46
Surplus at commencement of year,		5,901 27
TOTAL SURPLUS SEPT. 30, 1888,		$8,706 73
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		4
Open cars,		3
Horses,		21
Harnesses (pairs of),		5
Omnibuses,		2
Sleighs,		2
Other articles of equipment: Snow-plough, furniture, wagon, 2 sets sleigh runners.		
Largest number of horses owned at any time during the year,		23
Smallest number of horses owned at any time during the year,		19
Average number of horses owned during the year,		21

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$21,550 00
Equipment,	7,142 50
Land and buildings,	4,000 00
Cash and cash assets,	1,424 33
TOTAL ASSETS,	$34,116 83

LIABILITIES.

Capital stock,	$25,000 00
Unfunded debt,	410 10
Surplus,	8,706 73
TOTAL LIABILITIES,	$34,116 83

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To expenses,	$11,252 15
interest,	56 35
dividends,	1,500 00
Balance carried forward Sept. 30, 1888,	8,706 73
	$21,515 23

CR.

By balance Sept. 30, 1887,	$5,901 27
total income,	15,613 96
	$21,515 23

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	3.00 miles.
Aggregate length of switches, sidings, etc.,	.20 "
Total length of track, measured as single track,	3.20 "
Total length of track paved,	1.89 "
Weight of rail per yard, and description of rail: 35 pounds flat and T.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	3.00 "

MILES RUN, ETC.

Total number of miles run during the year,	40,386
Total number of passengers carried in the cars,	248,620
Total number of round trips for the year,	6,731
Number of persons regularly employed by company,	8
Rates of fare: 3, 5 and 10 cents; package, $4\frac{1}{6}$ and $6\frac{2}{3}$ cents.	

PROPER ADDRESS OF THE COMPANY.

NATICK & COCHITUATE STREET RAILWAY COMPANY,

NATICK, MASS.

NAME AND RESIDENCE OF OFFICERS.

Harrison Harwood, *President*, Natick, Mass. George F. Keep, *Superintendent*, Cochituate, Mass. Wm. H. Bent, *Treasurer*, Cochituate, Mass. Frank H. Hayes, *Clerk of Corporation*, Natick, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Harrison Harwood, Natick, Mass. Wm. H. Bent, Cochituate, Mass. Frank H. Hayes, Natick, Mass. John O. Wilson, Natick, Mass. George F. Keep, Cochituate, Mass. O. A. Felch, Natick, Mass. Charles A. Pook, Natick, Mass.

HARRISON HARWOOD,
WM. H. BENT,
O. A. FELCH,
GEO. F. KEEP,
FRANK H. HAYES,
Directors.

WM. H. BENT,
Treasurer.

GEO. F. KEEP,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. NATICK, Oct. 24, 1888. Then personally appeared Harrison Harwood, William H. Bent, O. A. Felch, George F. Keep and Frank H. Hayes, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

P. H. COONE,
Justice of the Peace.

REPORT

OF THE

NEWTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

BOSTON, October, 1888.

To the Honorable Board of Railroad Commissioners of Massachusetts, 20 Beacon Street, Boston.

The president, clerk and treasurer of the Newton Street Railway Company beg leave to submit the following report: —

1. That the officers of said corporation are Horace B. Parker, president, and John C. Lane, clerk and treasurer; that the directors are Horace B. Parker, J. W. Stover, George W. Morse, John C. Lane and T. J. Kenny.

2. The capital stock is fifty thousand dollars, which has been subscribed in full, but none as yet paid in.

3. The board of aldermen of the city of Newton have granted the company a location which crosses the Boston & Albany Railroad at grade, and, no sufficient authority having been received for the construction of the railway of this company across the said railroad, no work has as yet been commenced by this corporation on their lines.

Respectfully submitted,

President's address:
141 FEDERAL STREET, BOSTON.

HORACE B. PARKER,
President.

Treasurer's address:
28 STATE STREET, BOSTON.

JOHN C. LANE,
Clerk and Treasurer.

REPORT

OF THE

NEWBURYPORT & AMESBURY HORSE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$120,000 00	
Capital stock authorized by votes of company,	120,000 00	
Capital stock paid (par value of shares, $100),		$120,000 00
Number of stockholders,	27	
DEBT.		
Funded debt, as follows:		$50,000 00
Mortgage notes due 1889–1902, rate of interest 6 per cent.,	$20,000 00	
Bonds due 1906, rate of interest 6 per cent.,	30,000 00	
Unfunded debt, as follows:		56,939 13
Notes payable,	$42,700 00	
Accounts payable,	14,239 13	
TOTAL GROSS DEBT,		$106,939 13
Amount of cash assets, viz.:		16,050 59
Cash,	$6,064 29	
Supplies,	8,765 96	
Debit balances,	1,220 34	
NET DEBT,		$90,888 54
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$135,575 14
EQUIPMENT.		
Horses,		$13,950 00
Cars,		33,096 83
Other articles of equipment,		5,742 90
TOTAL COST OF EQUIPMENT,		$52,789 73
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$32,359 28
TOTAL COST OF LAND AND BUILDINGS,		$32,359 28
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$220,724 14
Cash assets,		16,050 59
TOTAL PROPERTY AND ASSETS OF COMPANY,		$236,774 74

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 26,514),		$54,813 71
New horses (number, 33),		11,221 00
New cars (number, 7),		6,499 98
Other equipment,		5,742 90
Land and buildings,		12,577 59
TOTAL ADDITION TO PROPERTY,		$90,855 18
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$43,452 70
Received from sales of manure,		358 38
TOTAL EARNINGS,		$43,811 08
Income from other sources:		367 45
Rents of buildings,	$123 93	
Advertising in cars and offices,	154 00	
Sales of old material,	89 52	
TOTAL INCOME FROM ALL SOURCES,		$44,178 53
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$1,109 10
Repairs of cars and other vehicles, harness and horse-shoeing,		1,780 05
Repairs of buildings,		209 02
Renewal of horses,		2,168 00
Wages and salaries of all other persons employed in operating the road,		16,937 63
Provender,		7,652 53
Taxes, State and local,		465 66
Insurance,		653 50
Office expenses, and all other expenses not included above,		3,870 00
TOTAL EXPENSES OF OPERATING,		$34,845 49
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$9,333 04
Interest accrued during the year,		6,156 92
Balance for the year, or surplus,		3,176 12
Surplus at commencement of year,		6,659 49
TOTAL SURPLUS SEPT. 30, 1888,		$9,835 61
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		10
Open cars,		13
Horses,		91
Harnesses (pairs of),		38
Sleighs,		4
Other articles of equipment:		
One plough, 1 herdic, 2 carts, 4 wagons, 2 pungs, 1 leveller, 13 stoves, 7 sets scrapers, 2 safes, 2 desks, and office and stable furniture.		
Largest number of horses owned at any time during the year,		91
Smallest number of horses owned at any time during the year,		58
Average number of horses owned during the year,		75

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$135,575 14
Equipment,	52,789 73
Land and buildings,	32,359 28
Cash and cash assets,	16,050 59
TOTAL ASSETS,	$236,774 74

LIABILITIES.

Capital stock,	$120,000 00
Funded debt,	50,000 00
Unfunded debt,	56,939 13
Surplus,	9,835 61
TOTAL LIABILITIES,	$236,774 74

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To expenses,	$34,845 49
interest,	6,156 92
Balance carried forward Sept. 30, 1888,	9,835 61
	$50,838 02

CR.

By balance Sept. 30, 1887,	$6,659 49
total income,	44,178 53
	$50,838 02

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	11.60 miles.
Aggregate length of switches, sidings, etc.,	.24 "
Total length of track, measured as single track,	11.84 "
Total length of track paved,	3.25 "

Weight of rail per yard, and description of rail: 35 pounds T and Johnson, 45 pounds steel.

Description of the several lines or routes operated by the company:

From Marlborough Street in Newburyport to Market Square in Amesbury, and from Amesbury Ferry by the "River Road" to Sargent's Hall in Merrimac.

Total length of railway, measured as single track, not including sidings, etc., operated by this company,	11.60 miles.

MILES RUN, ETC.

Total number of miles run during the year,	1,314,211
Total number of passengers carried in the cars,	872,624
Total number of round trips for the year,	10,041
Number of persons regularly employed by company,	38
Rates of fare,	5 and 10 cents.

PROPER ADDRESS OF THE COMPANY.

NEWBURYPORT & AMESBURY HORSE RAILROAD COMPANY,
NEWBURYPORT, MASS.

NAME AND RESIDENCE OF OFFICERS.

Charles Odell, *President*, Salem, Mass. Willard B. Ferguson, *Superintendent*, Salem, Mass. A. G. Reynolds, *Treasurer and Clerk of Corporation*, Newburyport, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles Odell, Salem, Mass. Willard B. Ferguson, Salem, Mass. Charles H. Odell, Salem, Mass. John M. Anderson, Salem, Mass. Nathan Nichols, Salem, Mass. Thomas H. Johnson, Salem, Mass. Rufus H. Brown, Peabody, Mass. Charles C. G. Thornton, Boston, Mass. George H. Stevens, Newburyport, Mass.

CHARLES ODELL,
THOS. H. JOHNSON,
JOHN M. ANDERSON,
NATHAN NICHOLS,
WILLARD B. FERGUSON,
GEORGE H. STEVENS,
Directors.
AUGUSTUS G. REYNOLDS,
Treasurer.
WILLARD B. FERGUSON,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Nov. 5, 1888. Then personally appeared Charles Odell, Thomas H. Johnson, John M. Anderson, Willard B. Ferguson, Augustus G. Reynolds and Nathan Nichols (who affirms), and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHARLES H. ODELL,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Nov. 6, 1888. Then personally appeared George H. Stevens, director in the Newburyport & Amesbury Horse Railroad Company, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

NATHANIEL GREELY,
Justice of the Peace.

REPORT

OF THE

NORTHAMPTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$300,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock paid (par value of shares, $100),		$50,000 00
Number of stockholders,	11	
DEBT.		
Unfunded debt, as follows:		$5,000 00
Accounts payable,	$5,000 00	
TOTAL GROSS DEBT,		$5,000 00
Amount of cash assets, viz.:		77 16
Cash,	$77 16	
NET DEBT,		$4,922 84
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$36,000 00
EQUIPMENT.		
Horses,		$3,500 00
Cars,		4,600 00
Other articles of equipment,		600 00
TOTAL COST OF EQUIPMENT,		$8,700 00
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$1,775 00
Buildings owned by company needed in operating road,		3,350 50
TOTAL COST OF LAND AND BUILDINGS,		$5,125 50
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$49,825 50
Cash assets,		77 16
TOTAL PROPERTY AND ASSETS OF COMPANY,		$49,902 66
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Land and buildings,		$425 50
TOTAL ADDITION TO PROPERTY,		$425 50
Property sold or reduced in valuation on the books, viz.:		417 50
One car,	$417 50	
NET ADDITION TO PROPERTY FOR THE YEAR,		$8 00

Revenue for the Year.	
Received from passengers on railways operated by this company,	$16,538 21
Received from mails and express,	232 50
Received from sales of manure,	113 00
Total Income from all Sources,	$16,883 71
Expenses of Operating the Railway for the Year.	
Repairs of road-bed and track,	$1,187 71
Repairs of cars and other vehicles, harness and horse-shoeing,	2,336 54
Repairs of buildings,	613 34
Renewal of horses,	1,685 25
Wages and salaries of president, treasurer, superintendent and their clerks,	1,000 00
Wages and salaries of all other persons employed in operating the road,	4,283 75
Provender,	3,858 58
Taxes, State and local,	89 03
Insurance,	186 00
Office expenses, and all other expenses not included above,	1,564 54
Total Expenses of Operating,	$16,804 74
Net Income, Dividends, etc.	
Total Net Income above Operating Expenses,	$78 97
Balance for the year, or surplus,	78 97
Deficit at commencement of year,	5,176 31
Deficit at commencement of year as changed by aforesaid entries,	5,176 31
Total Deficit Sept. 30, 1888,	5,097 34
Inventory of Equipment Sept. 30, 1888.	
Box cars,	4
Open cars,	4
Horses,	40
Harnesses (pairs of),	10
Omnibuses,	1
Sleighs,	1
Other articles of equipment,	1
Largest number of horses owned at any time during the year,	42
Smallest number of horses owned at any time during the year,	30
Average number of horses owned during the year,	36

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$36,000 00
Equipment,	8,700 00
Land and buildings,	5,125 50
Cash and cash assets,	77 16
Deficit,	5,097 34
Total Assets,	$55,000 00
Liabilities.	
Capital stock,	$50,000 00
Unfunded debt,	5,000 00
Total Liabilities,	$55,000 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.	
Dr.	
To balance Sept. 30, 1887,	$5,176 31
expenses,	16,804 75
	$21,981 05
Cr.	
By total income,	$16,883 71
Balance carried forward Sept. 30, 1888,	5,097 34
	$21,981 05

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	3.20 miles.
Aggregate length of switches, sidings, etc.,	.03 "
Total length of track, measured as single track,	3.23 "
Weight of rail per yard, and description of rail: 33 pounds.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	3.20 "
Miles Run, etc.	
Total number of miles run during the year,	50,903
Total number of passengers carried in the cars,	211,776
Total number of round trips for the year,	7,954
Number of persons regularly employed by company,	12
Rates of fare,	6 and12 cents.

Proper Address of the Company.

NORTHAMPTON STREET RAILWAY COMPANY,
Northampton, Mass.

Name and Residence of Officers.

Oscar Edwards, *President*, Northampton, Mass. E. C. Clark, *Superintendent and Treasurer*, Northampton, Mass. M. H. Spaulding, *Clerk of Corporation*, Northampton, Mass.

Name and Residence of Directors last Elected.

Oscar Edwards, Northampton, Mass. M. H. Spaulding, Northampton, Mass. J. L. Warriner, Northampton, Mass. J. C. Hammond, Northampton, Mass. E. C. Clark, Northampton, Mass.

OSCAR EDWARDS,
E. C. CLARK,
J. C. HAMMOND,
J. L. WARRINER,
Directors.
E. C. CLARK,
Treasurer.
E. C. CLARK,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

HAMPSHIRE, ss. Oct. 4, 1888. Then personally appeared Oscar Edwards, E. C. Clark, J. C. Hammond and J L. Warriner, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

JOHN WHITTELSEY,
Justice of the Peace.

REPORT

OF THE

NORTH WOBURN STREET RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$200,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock paid (par value of shares, $100),		$100,000 00
Number of stockholders,	64	
DEBT.		
Unfunded debt, as follows:		$18,683 39
Notes payable,	$8,000 00	
Outstanding tickets,	722 40	
Sundry open accounts,	9,960 99	
TOTAL GROSS DEBT,		$18,683 39
Amount of cash assets, viz.:		5,297 42
Cash,	$4,628 95	
Supplies,	434 90	
Debit balances,	233 57	
NET DEBT,		$13,385 97
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$86,221 80	
Engineering, agencies, salaries and other expenses during construction,	281 67	
TOTAL COST OF CONSTRUCTION,		$86,503 47
EQUIPMENT.		
Horses,		$8,153 50
Cars,		9,633 13
Other articles of equipment,		1,800 46
TOTAL COST OF EQUIPMENT,		$19,587 09
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$1,453 75
Buildings owned by company needed in operating road,		8,183 99
TOTAL COST OF LAND AND BUILDINGS,		$9,637 74

TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$115,728 30
Cash assets,		5,297 42
TOTAL PROPERTY AND ASSETS OF COMPANY,		$121,025 72
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 14,420.95),		$35,075 77
New horses (number, 28),		4,028 50
New cars (number, 1),		1,191 13
Other equipment,		501 01
TOTAL ADDITION TO PROPERTY,		$40,796 41
Property sold or reduced in valuation on the books, viz.:		585 50
Five horses sold,	$552 50	
Old harness sold,	3 00	
Old sleighs sold,	30 00	
NET ADDITION TO PROPERTY FOR THE YEAR,		$40,210 91
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$15,272 98
Received from other railways as tolls or rent:		64 21
East Middlesex Street Railway Company,	$64 21	
Received from sales of manure,		208 17
TOTAL EARNINGS,		$15,545 36
Income from other sources:		150 00
Advertising in cars,	$150 00	
TOTAL INCOME FROM ALL SOURCES,		$15,695 36
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$302 45
Repairs of cars and other vehicles, harness and horse-shoeing,		799 75
Repairs of buildings,		78 99
Renewal of horses,		324 00
Wages and salaries of president, treasurer, superintendent and their clerks,		1,429 84
Wages and salaries of all other persons employed in operating the road,		5,017 94
Provender,		2,927 87
Taxes, State and local,		1,162 03
Rent and tolls paid other companies for use of their roads:		33 19
West End Street Railway Company,	$33 19	
Insurance,		334 49
Damages for injuries to persons and property,		11 00
Office expenses, and all other expenses not included above,		1,185 96
TOTAL EXPENSES OF OPERATING,		$13,607 51
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$2,087 85
Interest accrued during the year,		182 32
Dividends declared (3 per cent.) for the year on $75,000 capital stock,		2,250 00
Deficit for the year,		344 47
Surplus at commencement of year,		2,686 80
TOTAL SURPLUS SEPT. 30, 1888,		$2,342 33

Inventory of Equipment Sept. 30, 1888.	
Box cars,	4
Open cars,	6
Horses,	51
Harnesses (pairs of),	9
Other articles of equipment:	
One snow-plough, 1 leveller, 1 sled, 2 wagons, 1 Concord wagon, 6 harnesses.	
Largest number of horses owned at any time during the year,	56
Smallest number of horses owned at any time during the year,	28
Average number of horses owned during the year,	35

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$86,503 47
Equipment,	19,587 09
Land and buildings,	9,637 74
Cash and cash assets,	5,297 42
Total Assets,	$121,025 72
Liabilities.	
Capital stock,	$100,000 00
Unfunded debt,	18,683 39
Surplus,	2,342 33
Total Liabilities,	$121,025 72

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$13,607 51
interest,	182 32
dividends,	2,250 00
Balance carried forward Sept. 30, 1888,	2,342 33
	$18,382 16
Cr.	
By balance Sept. 30, 1887,	$2,686 80
total income,	15,695 36
	$18,382 16

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	7.34 miles.
Aggregate length of switches, sidings, etc.,	.21 "
Total length of track, measured as single track,	7.55 "
Total length of track paved,	5.71 "
Weight of rail per yard, and description of rail: 40 pounds T; 35 and 42 pounds tram.	
Description of the several lines or routes operated by the company:	
From North Woburn the track runs by way of Main Street, through Woburn and Winchester, and by way of Pur-	

chase Street, in Medford, to a junction with the track of the West End Street Railway at corner of said Purchase Street and High Street, in said Medford.	
Length of railway belonging to other companies, measured as single track, not including sidings, etc,, operated by this company, *or over which this company runs its cars*, with the description of the same:	.462 miles.
From above-named junction the cars of this company are run on the track of the West End Street Railway Company to Medford Square, in Medford.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . .	7.802 "
MILES RUN, ETC.	
Total number of miles run during the year, ...	56,965
Total number of passengers carried in the cars, . . .	280,663
Total number of round trips for the year, ...	5,746
Number of persons regularly employed by company, . .	15
Rates of fare: Local cash fare, 6 cents; through cash fare, 12 cents; local ticket fare, 5 cents; through ticket fare, 10 cents.	

PROPER ADDRESS OF THE COMPANY.

NORTH WOBURN STREET RAILROAD COMPANY,
35 CONGRESS STREET, BOSTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

Amos F. Breed, *President*, Lynn, Mass. John E. Sewall, *Superintendent*, Woburn, Mass. Frank H. Monks, *Treasurer and Clerk of Corporation*, Brookline, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Amos F. Breed, Lynn, Mass. John M. Harlow, Woburn, Mass. Freeman A. Loring, Winchester, Mass. Benjamin Hinckley, Woburn, Mass. Gilman F. Jones, Woburn, Mass. Elwin C. Foster, Revere, Mass. Frank H. Monks, Brookline, Mass.

AMOS F. BREED,
BENJ. HINCKLEY,
GILMAN F. JONES,
FRANK H. MONKS,
ELWIN C. FOSTER,
Directors.

FRANK H. MONKS,
Treasurer.

JOHN E. SEWALL,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 8, 1888. Then personally appeared Amos F. Breed, Benj. Hinckley, Gilman F. Jones, Frank H. Monks, Elwin C. Foster and John E. Sewall, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

EDWIN HOWLAND,
Justice of the Peace.

REPORT

OF THE

ONSET STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$20,000 00	
Capital stock authorized by votes of company,	14,000 00	
Capital stock paid (par value of shares, $100),		$13,520 00
Number of stockholders,	21	
DEBT.		
Amount of cash assets, viz.:		$575 83
Cash,	$110 06	
Debit balances,	465 77	
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving,	$502 69	
Track, including timber, rails, etc., and laying,	5,238 84	
Engineering, agencies, salaries, and other expenses during construction,	626 60	
TOTAL COST OF CONSTRUCTION,		$6,368 13
EQUIPMENT.		
Horses,		$160 90
Cars,		6,763 76
Other articles of equipment,		166 49
TOTAL COST OF EQUIPMENT,		$7,091 15
LAND AND BUILDINGS.		
Buildings owned by company needed in operating road,		$381 87
TOTAL COST OF LAND AND BUILDINGS,		$381 87
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$13,841 15
Cash assets,		575 83
TOTAL PROPERTY AND ASSETS OF COMPANY,		$14,416 98
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Expenditures on account of construction,		$178 79
New horses (number, 1),		160 90
Other equipment,		33 95
Land and buildings,		25 05
TOTAL ADDITION TO PROPERTY,		$398 69

Revenue for the Year.		
Received from passengers on railways operated by this company,		$1,999 15
Received from sales of manure,		5 00
Total Earnings,		$2,004 15
Income from other sources:		320 26
Freight and baggage,	$320 26	
Total Income from all Sources,		$2,324 41
Expenses of Operating the Railway for the Year.		
Repairs of road-bed and track,		$186 72
Repairs of cars and other vehicles, harness and horse-shoeing,		136 94
Wages and salaries of president, treasurer, superintendent and their clerks,		150 00
Wages and salaries of all other persons employed in operating the road,		1,126 92
Provender (hay and grain, coal and wood),		205 06
Taxes, State and local,		187 43
Insurance,		67 50
Office expenses, and all other expenses not included above,		236 99
Total Expenses of Operating,		$2,297 56
Net Income, Dividends, etc.		
Total Net Income above Operating Expenses,		$26 85
Dividends declared (3 per cent.) for the year,		405 00
Balance for the year, deficit,		378 15
Surplus at commencement of year,		1,275 13
Total Surplus Sept. 30, 1888,		$896 98
Inventory of Equipment Sept. 30, 1888.		
Box cars,		5
Open cars,		1
Horses (one, and two Baldwin noiseless street car motors),		1
Harness,		1
Largest number of horses owned at any time during the year,		1
Smallest number of horses owned at any time during the year,		1
Average number of horses owned during the year,		1

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$6,368 13
Equipment,	7,091 15
Land and buildings,	381 87
Cash and cash assets,	575 83
Total Assets,	$14,416 98
Liabilities.	
Capital stock,	$13,520 00
Surplus,	896 98
Total Liabilities,	$14,416 98

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.	
Dr.	
To expenses,	$2,297 56
dividends,	405 00
Balance carried forward Sept. 30, 1888,	896 98
	$3,599 54
Cr.	
By balance Sept. 30, 1887,	$1,275 13
total income,	2,324 41
	$3,599 54

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	1.300 miles.
Aggregate length of switches, sidings, etc.,	.125 "
Total length of track, measured as single track,	1.425 "
Total length of track paved,	
Weight of rail per yard, and description of rail: 35 pounds steel T rail.	
Description of the several lines or routes operated by the company: Onset station, Old Colony Railroad, through land of the Onset Bay Grove Association to Onset Avenue, thence from the opposite side of said avenue continuing in a direct line to Shell Point in Wareham, Mass.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	1.300 miles.

Miles Run, etc.	
Total number of miles run during the year,	2,644
Total number of passengers carried in the cars,	21,979
Total number of round trips for the year,	1,175
Number of persons regularly employed by company,	7
Rates of fare,	10 cents.

Proper Address of the Company.

ONSET STREET RAILWAY COMPANY,

Onset, Mass.

Name and Residence of Officers.

E. Gerry Brown, *President*, 16 City Square, C. D., Boston, Mass. Walter W. Currier, *Treasurer and Clerk of Corporation*, Haverhill, Mass.

Name and Residence of Directors last Elected.

E. Gerry Brown, 16 City Square, C. D., Boston, Mass. W. W. Currier, Haverhill, Mass. Wm. D. Crockett, 18 Post Office Square, Boston, Mass.

Simeon Butterfield, Chelsea, Mass. Alfred Nash, Chelsea, Mass. Cyrus Peabody, Warren, R. I. E. Y. Johnson, Warren, R. I. Charles H. Young, Lowell, Mass.

E. GERRY BROWN,
CYRUS PEABODY,
E. Y. JOHNSON,
ALFRED NASH,
WM. D. CROCKETT,
Directors.
WALTER W. CURRIER,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Oct. 27, 1888. Then personally appeared E. Gerry Brown, Cyrus Peabody, E. Y. Johnson, Alfred Nash, W. W. Currier, Wm. D. Crockett, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

SIMEON BUTTERFIELD,
Justice of the Peace.

REPORT

OF THE

PITTSFIELD STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$50,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock paid (par value of shares, $100),*		$43,110 00
Number of stockholders,	46	
DEBT.		
Unfunded debt, as follows:		$13,000 00
Loan,	$13,000 00	
TOTAL GROSS DEBT,		$13,000 00
Amount of cash assets, viz.:		328 97
Cash,	$328 97	
NET DEBT,		$12,671 03
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving,	$5,908 38	
Track, including timber, rails, etc., and laying,	16,589 13	
Engineering, agencies, salaries and other expenses during construction,	5,741 77	
TOTAL COST OF CONSTRUCTION,		$28,239 28
EQUIPMENT.		
Horses,		$6,520 00
Cars,		8,048 85
Other articles of equipment,		880 56
TOTAL COST OF EQUIPMENT,		$15,449 41
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$1,200 00
Buildings owned by company needed in operating road,		4,571 34
TOTAL COST OF LAND AND BUILDINGS,		$5,771 34

* There was a certificate for sixty-four shares of stock issued without consideration, signed without authority, and a suit has been commenced to test the validity of the certificate.

OTHER PROPERTY.	
Bridge and building at picnic grounds,	$1,325 11
TOTAL AMOUNT OF PERMANENT INVESTMENTS,	$50,785 14
Cash assets,	328 97
TOTAL PROPERTY AND ASSETS OF COMPANY,	$51,114 11
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.	
Extension of tracks,	$11 26
New horses,	320 00
New cars,	1,400 00
Other equipment,	400 06
Land and buildings,	1,599 00
TOTAL ADDITION TO PROPERTY,	$3,730 32
REVENUE FOR THE YEAR.	
Received from passengers on railways operated by this company,	$15,782 28
Received from sales of manure,	260 00
Income from other sources:	132 60
Rent of picnic grounds, $132 60	
TOTAL INCOME FROM ALL SOURCES,	$16,174 88
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.	
Repairs of road-bed and track,	$720 93
Repairs of cars and other vehicles, harness and horse-shoeing,	1,073 86
Repairs of buildings,	171 16
Wages and salaries of president, treasurer, superintendent and their clerks,	1,750 00
Wages and salaries of all other persons employed in operating the road,	8,272 77
Provender,	5,534 95
Taxes, State and local,	512 42
Insurance,	191 35
Damages for injuries to persons and property,	10 00
Office expenses, and all other expenses not included above,	1,717 10
TOTAL EXPENSES OF OPERATING,	$19,954 54
NET INCOME, DIVIDENDS, ETC.	
TOTAL NET DEFICIT ABOVE OPERATING EXPENSES,	$3,779 66
Balance for the year, or deficit,	3,779 66
Deficit at commencement of year,	1,216 23
TOTAL DEFICIT SEPT. 30, 1888,	$4,995 89
INVENTORY OF EQUIPMENT SEPT. 30, 1888.	
Box cars,	5
Open cars,	5
Horses,	42
Harnesses (pairs of),	15
Sleighs,	1
Other articles of equipment:	
One snow-plough, 1 road scraper, 2 wagons, 1 sleigh.	
Largest number of horses owned at any time during the year,	42
Smallest number of horses owned at any time during the year,	42
Average number of horses owned during the year,	42

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$28,239 28
Equipment,	15,449 41
Land and buildings,	5,771 34
Other property,	1,325 11
Cash and cash assets,	328 97
Deficit,	4,995 89
TOTAL ASSETS,	$56,110 00

LIABILITIES.

Capital stock,	$43,110 00
Unfunded debt,	13,000 00
TOTAL LIABILITIES,	$56,110 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To balance Sept. 30, 1887,	$1,216 23
expenses,	19,954 54
	$21,170 77

CR.

By total income,	$16,174 88
Balance Sept. 30, 1888,	4,995 89
	$21,170 77

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	3.3000 miles.
Aggregate length of switches, sidings, etc.,	.3200 "
Total length of track, measured as single track,	3.6200 "
Total length of track paved,	1.3037 "
Weight of rail per yard, and description of rail: Flat S, 40 and 45 pounds.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	3.3000 miles.

MILES RUN, ETC.

Total number of miles run during the year,	43,874
Total number of passengers carried in the cars,	309,254
Total number of round trips for the year,	8,538
Number of persons regularly employed by company,	15
Rates of fare: Cash, 6 cents; tickets, 5 for 25 cents.	

PROPER ADDRESS OF THE COMPANY.

THE PITTSFIELD STREET RAILWAY COMPANY,

PITTSFIELD, MASS.

NAME AND RESIDENCE OF OFFICERS.

Joseph Tucker, *President*, Pittsfield, Mass. C. P. Upson, *Superintendent*, Pittsfield, Mass. C. E. Merrill, *Treasurer*, Pittsfield, Mass. T. L. Allen, *Clerk of Corporation*, Pittsfield, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Joseph Tucker, Pittsfield, Mass. Alexander Kennedy, Pittsfield, Mass. Henry R. Peirson, Pittsfield, Mass. James L. Bacon, Pittsfield, Mass. Philip A. Chase, Lynn, Mass. T. L. Allen, Pittsfield, Mass. C. E. Merrill, Pittsfield, Mass.

JOSEPH TUCKER,
THEO. L. ALLEN,
HENRY R. PEIRSON,
C. E. MERRILL,
Directors.

C. E. MERRILL,
Treasurer.

C. P. UPSON,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

BERKSHIRE, ss. Oct. 3, 1888. Then personally appeared Joseph Tucker, Theodore L. Allen, Henry R. Peirson and C. E. Merrill, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

WM. R. PLUNKETT,
Justice of the Peace.

REPORT

OF THE

PLUM ISLAND STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$40,000 00	
Capital stock authorized by votes of company,	40,000 00	
Capital stock paid (par value of shares, $100),		$40,000 00
Number of stockholders,	20	
DEBT.		
Funded debt, as follows:		$9,000 00
Bonds due 1907, rate of interest 5 per cent.,	$40,000 00	
Less bonds in treasurer's hand,	31,000 00	
Unfunded debt, as follows:		42,146 52
Notes payable,	$39,500 00	
Outstanding accounts,	2,646 52	
TOTAL GROSS DEBT,		$51,146 52
Amount of cash assets, viz.:		4,503 36
Cash,	$2,983 91	
Debit balances,	1,519 45	
NET DEBT,		$46,643 16
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$54,239 85
EQUIPMENT.		
Horses,		$2,306 14
Cars,		5,981 09
Other articles of equipment,		3,101 37
TOTAL COST OF EQUIPMENT,		$11,388 60
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$21,300 73
TOTAL COST OF LAND AND BUILDINGS,		$21,300 73

OTHER PROPERTY.		
Flying horses,		$1,277 13
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$88,206 36
Cash assets,		4,503 31
TOTAL PROPERTY AND ASSETS OF COMPANY,		$92,709 67
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Completion of tracks,		$586 27
New horses (number, 6),		998 00
Dummy engine (number, 1),		2,503 42
Flying horses,		1,277 13
Land and buildings,		2,340 98
TOTAL ADDITION TO PROPERTY,		$7,702 80
Property sold or reduced in valuation on the books, viz.:		400 00
One car sold,	$400 00	
NET ADDITION TO PROPERTY FOR THE YEAR,		$7,302 80
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$8,019 65
Received from sales of manure,		11 00
TOTAL EARNINGS,		$8,030 65
Income from other sources:		1,170 00
Rent of real estate,	$1,170 00	
TOTAL INCOME FROM ALL SOURCES,		$9,200 65
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$676 27
Repairs of cars and other vehicles, harness and horse-shoeing,		532 94
Repairs of buildings,		1,569 18
Wages and salaries of all other persons employed in operating the road,		2,784 79
Provender,		685 96
Taxes, State and local,		703 50
Insurance,		390 00
Office expenses, and all other expenses not included above,		1,746 88
TOTAL EXPENSES OF OPERATING,		$8,489 52
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$711 13
Interest accrued during the year,		1,863 10
Dividends declared (7 per cent.) for the year,		2,800 00
Balance for the year, or deficit,		3,951 97
Surplus at commencement of year,	$5,519 21	
Deduct:		
Error in reporting balance, 1887,	4 09	
Surplus at commencement of year, as changed by aforesaid entries,		5,515 12
TOTAL SURPLUS SEPT. 30, 1888,		$1,563 15

Inventory of Equipment Sept. 30, 1888.	
Box cars,	1
Open cars;	8
Horses,	17
Harnesses (pairs of),	8
Other articles of equipment: One wagon.	
Largest number of horses owned at any time during the year,	17
Smallest number of horses owned at any time during the year,	6
Average number of horses owned during the year,	12

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$54,239 85
Equipment,	11,388 60
Land and buildings,	21,300 73
Other property,	1,277 13
Cash and cash assets,	4,503 36
Total Assets,	$92,709 67

Liabilities.	
Capital stock,	$40,000 00
Funded debt,	9,000 00
Unfunded debt,	42,146 52
Surplus,	1,563 15
Total Liabilities,	$92,709 67

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$8,489 52
interest,	1,863 10
dividends,	2,800 00
Balance carried forward Sept. 30, 1888,	1,563 15
	$14,715 77

Cr.	
By balance, Sept. 30, 1887,	$5,515 12
total income,	9,200 65
	$14,715 77

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	5.20 miles.
Aggregate length of switches, sidings, etc.,	.40 "
Total length of track, measured as single track,	5.60 "
Total length of track paved,	1.66 "
Weight of rail per yard, and description of rail: 35 and 40 pounds T, and 35 pounds Johnson.	

Description of the several lines or routes operated by the company:	
From foot of Fair Street in Newburyport, through Water Street and Plum Island Turnpike to Plum Island Hotel, and across Plum Island to wharf at Plum Island Point, Merrimac River.	
Length of railway belonging to other companies, measured as single track, not including sidings, etc., operated by this company, *or over which this company runs its cars*, with the description of same,	5.20 miles.
Total length of railway measured as single track, not including sidings, etc., operated by this company,	5.20 "

MILES RUN, ETC.

Total number of miles run during the year,	29,140
Total number of passengers carried in the cars,	98,691
Total number of round trips for the year,	2,914
Number of persons regularly employed by company,	8
Rates of fare,	5, 7½ and 10 cts.

PROPER ADDRESS OF THE COMPANY.

PLUM ISLAND STREET RAILWAY COMPANY,

NEWBURYPORT, MASS.

NAME AND RESIDENCE OF OFFICERS.

Charles Odell, *President*, Salem, Mass. Willard B. Ferguson, *Superintendent*, Salem, Mass. Augustus G. Reynolds, *Treasurer*, Newburyport, Mass. Charles H. Brown, *Clerk of Corporation*, Newburyport, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Charles Odell, Salem, Mass. Willard B. Ferguson, Salem, Mass. John M. Anderson, Salem, Mass. Nathan Nichols, Salem, Mass. Thomas H. Johnson, Salem, Mass. Rufus H. Brown, Peabody, Mass. Charles C. G. Thornton, Boston, Mass. Edward P. Shaw, Newburyport, Mass. J. Frank Tilton, Amesbury, Mass.

CHARLES ODELL,
THOS. H. JOHNSON,
JOHN M. ANDERSON,
NATHAN NICHOLS,
EDWARD P. SHAW,
WILLARD B. FERGUSON,
J. FRANK TILTON,
Directors.

AUGUSTUS G. REYNOLDS,
Treasurer.

WILLARD B. FERGUSON,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. SALEM, Nov. 5, 1888. Then personally appeared Charles Odell, Thomas H. Johnson, John M. Anderson, Willard B. Ferguson, Augustus G. Reynolds and Nathan Nichols (who affirms), and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHARLES H. ODELL,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

ESSEX, ss. Nov. 7, 1888. Then personally appeared Edward P. Shaw and J. Frank Tilton, directors of the Plum Island Street Railway Company, and made oath to the truth of the foregoing statement subscribed, according to their best knowledge and belief.

WILLIAM F. HOUSTON,
Justice of the Peace.

REPORT

OF THE

QUINCY STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$40,000 00	
Capital stock authorized by votes of company,	37,500 00	
Capital stock paid (par value of shares, $100),		$34,450 00
Number of stockholders,	95	
DEBT.		
Unfunded debt, as follows:		$2,418 32
Note payable,	$2,000 00	
Sundry small bills payable,	418 32	
TOTAL GROSS DEBT,		$2,418 32
Amount of cash assets, viz.:		3,837 93
Cash,	$1,820 24	
Supplies,	2,017 69	
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving,	$7,800 42	
Track, including timber, rails, etc., and laying,	19,821 65	
Engineering, agencies, salaries, and other expenses during construction,	362 50	
TOTAL COST OF CONSTRUCTION,		$27,984 57
EQUIPMENT.		
Cars,		$5,442 16
TOTAL COST OF EQUIPMENT,		$5,442 16
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$33,426 73
Cash assets,		3,837 93
TOTAL PROPERTY AND ASSETS OF COMPANY,		$37,264 66
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks,		$27,984 57
New cars (number, 9),		5,442 16
TOTAL ADDITION TO PROPERTY,*		$33,426 73

*Built during the year.

REVENUE FOR THE PERIOD.*		
Received from passengers on railways operated by this company,		$5,177 75
Income from other sources:		6 25
Miscellaneous sources,	$6 25	
TOTAL INCOME FROM ALL SOURCES,		$5,184 00
EXPENSES OF OPERATING THE RAILWAY FOR THE PERIOD.*		
Repairs of cars and other vehicles, harness and horse-shoeing,		$158 96
Wages and salaries of superintendent and clerk,		250 00
Wages and salaries of all other persons employed in operating the road,		230 67
Paid contractor for operating the road, drivers, conductors and horses,		3,614 97
Insurance,		89 00
Office expenses, and all other expenses not included above,		444 06
TOTAL EXPENSES OF OPERATING,		$4,787 66
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$396 34
Balance for the year, or surplus,		396 34
TOTAL SURPLUS SEPT. 30, 1888,		396 34.
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		5
Open cars,		4

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$27,984 57
Equipment,	5,442 16
Cash and cash assets,	3,837 93
TOTAL ASSETS,	$37,264 66
LIABILITIES.	
Capital stock,	$34,450 00
Unfunded debt,	2,418 32
Surplus,	396 34
TOTAL LIABILITIES,	$37,264 66

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.	
To expenses,	$4,787 66
Balance carried forward Sept. 30, 1888,	396 34
	$5,184 00
CR.	
By total income,	$5,184 00
	$5,184 00

* Commenced operating two miles July 4, and balance of road operated July 29.

DESCRIPTION OF RAILWAY.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	4.26 miles.
Aggregate length of switches, sidings, etc.,	.26 "
Total length of track, measured as single track,	4.52 "
Total length of track paved,	1.27 "
Weight of rail per yard, and description of rail: 30 and 35 pounds T.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	4.26 miles.
MILES RUN, ETC.	
Total number of miles run during the year,	24,566
Total number of passengers carried in the cars,	103,528
Total number of round trips for the year,	3,476
Number of persons regularly employed by company,	4
Rates of fare: Single fare, 5 cents; school ticket, 3 cents.	

PROPER ADDRESS OF THE COMPANY.

QUINCY STREET RAILWAY COMPANY,
QUINCY, MASS.

NAME AND RESIDENCE OF OFFICERS.

H. M. Federhen, *President*, Quincy Point, Mass. H. M. Federhen (until November 1), B. T. Ordway (since that date), *Superintendent*, Quincy, Mass. John F. Merrill, *Treasurer*, Quincy, Mass. Fred'k H. Smith, *Clerk of Corporation*, Quincy Point, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

H. M. Federhen, Quincy Point, Mass. John F. Merrill, Quincy, Mass. Frank P. Waterhouse, Wollaston, Mass. Fred'k H Smith, Quincy Point, Mass. Wilson Tisdale, Quincy, Mass. John E. Drake, Quincy, Mass. Henry E. Sheldon, East Milton, Mass.

H. M. FEDERHEN,
JOHN F. MERRILL,
FRANK P. WATERHOUSE,
FRED'K H. SMITH,
WILSON TISDALE,
JOHN E. DRAKE,
Directors.

JOHN F. MERRILL,
Treasurer.

H. M. FEDERHEN,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

NORFOLK, ss. Nov. 8, 1888. Then personally appeared H. M. Federhen, John F. Merrill, Frank P. Waterhouse, Fred. H. Smith, Wilson Tisdale and John E. Drake, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

GEO. L. GILL,
Justice of the Peace.

REPORT

OF THE

QUINCY & BOSTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[In process of construction.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$50,000 00	
Capital stock paid in (par value of shares, $100),		$29,580 00
Number of stockholders,	56	
DEBT.		
Amount of cash assets, viz.:		$24,455 00
Cash,	$24,455 00	
PERMANENT INVESTMENTS.		
RAILWAY.		
Interest during construction, commissions for procuring subscriptions, discounts, etc.,	$5,000 00	
Engineering, agencies, salaries and other expenses during construction, and for treasurer's bond and Com. of Mass.,*	125 00	
TOTAL COST OF CONSTRUCTION,		$5,125 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$5,125 00
Cash assets,		24,455 00
TOTAL PROPERTY AND ASSETS OF COMPANY,		$29,580 00

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$5,125 00
Cash and cash assets,	24,455 00
TOTAL ASSETS,	$29,580 00
LIABILITIES.	
Capital stock,	$29,580 00
TOTAL LIABILITIES,	$29,580 00

* One-half of cost of treasurer's bond paid by him on Oct. 12, 1888 ($37.50).

PROPER ADDRESS OF THE COMPANY.

QUINCY & BOSTON STREET RAILWAY COMPANY,
QUINCY, MASS.

NAME AND RESIDENCE OF OFFICERS.

John Quincy Adams, *President*, Quincy, Mass. John A. Duggan, *Superintendent*, Quincy, Mass. Arthur Burnham, *Treasurer*, Boston, Mass. Wm. G. A. Pattee, *Clerk of Corporation*, Quincy, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

John Quincy Adams, Quincy, Mass. Arthur Burnham, Boston, Mass. Josiah Quincy, Quincy, Mass. Wm. G. A. Pattee, Quincy, Mass. Wm. A. Hodges, Quincy, Mass. John A. Duggan, Quincy, Mass. Thomas H. McDonnell, Quincy, Mass. J. Brooks Parker, Boston, Mass. H. T. Whitman, Quincy, Mass.

J. Q. ADAMS,
WM. G. A. PATTEE,
ARTHUR BURNHAM,
THOMAS H. McDONNELL,
WM. A. HODGES,
HERBERT T. WHITMAN,
JOSIAH QUINCY,
Directors.

ARTHUR BURNHAM,
Treasurer.

JOHN A. DUGGAN,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Dec. 6 and 7, 1888. Then personally appeared John Quincy Adams, Wm. G. A. Pattee, Arthur Burnham, Wm. A. Hodges, H. T. Whitman, Thomas H. McDonnell, Josiah Quincy and John A. Duggan, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHAS. H. SHRIVER,
Justice of the Peace.

REPORT

OF THE

REVERE STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[Operated by electricity.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$30,000 00	
Capital stock authorized by votes of company,	30,000 00	
Capital stock paid (par value of shares, $100),*		$15,000 00
Number of stockholders,	11	
DEBT.		
Amount of cash assets, viz.:		$2,271 43
Cash,	$2,271 43	
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$9,086 98	
Engineering, agencies, salaries, and other expenses during construction,	112 50	
TOTAL COST OF CONSTRUCTION,		$9,199 48
EQUIPMENT.		
Cars,		$650 00
TOTAL COST OF EQUIPMENT,		$650 00
LAND AND BUILDINGS.		
Buildings owned by company needed in operating road,		$234 00
TOTAL COST OF LAND AND BUILDINGS,		$234 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$10,083 48
Cash assets,		2,271 43
TOTAL PROPERTY AND ASSETS OF COMPANY,		$12,354 91
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.†		
Extension of tracks,		$9,199 48
New cars (number, 1),		650 00
Land and buildings,		234 00
TOTAL ADDITION TO PROPERTY,		$10,083 48

* 50 per cent. paid in. † Built during the year.

REVENUE FOR THE YEAR.*	
Received from passengers on railways operated by this company,	$635 45
TOTAL INCOME FROM ALL SOURCES,	$635 45
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.†	
Wages and salaries of president, treasurer, superintendent and their clerks,	$2,500 00
Wages and salaries of all other persons employed in operating the road,	90 00
Office expenses, and all other expenses not included above,	690 54
TOTAL EXPENSES OF OPERATING,	$3,280 54
NET INCOME, DIVIDENDS, ETC.	
TOTAL NET DEFICIT ABOVE OPERATING EXPENSES,	$2,645 09
Balance for the period, or deficit,	2,645 09
TOTAL DEFICIT SEPT. 30, 1888,	2,645 09
INVENTORY OF EQUIPMENT SEPT. 30, 1888.	
Open cars,	2

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$9,199 48
Equipment,	650 00
Land and buildings,	234 00
Cash and cash assets,	2,271 43
Deficit,	2,645 09
TOTAL ASSETS,	$15,000 00
LIABILITIES.	
Capital stock,	$15,000 00
TOTAL LIABILITIES,	$15,000 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.	
To expenses,	$3,280 54
	$3,280 54
CR.	
By total income,	$635 45
Balance carried forward Sept. 30, 1888,	2,645 09
	$3,280 54

DESCRIPTION OF RAILWAY.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	.64 miles.
Aggregate length of switches, sidings, etc.,	.10 "

* Operated but twenty-four days during the year. † Operated by electricity.

Total length of track, measured as single track, . . .	.74 miles.
Total length of track paved, ...	.74 "
Weight of rail per yard, and description of rail: 42 pounds flat bar.	
Description of the several lines or routes operated by the company:	
Runs from Crescent Beach station, Boston, Revere Beach & Lynn Railway, to Ocean Pier.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . .	.64 miles.
MILES RUN, ETC.	
Total number of miles run during the year, ...	2,400
Total number of passengers carried in the cars, . . .	12,709
Number of persons regularly employed by company, . .	4
Rates of fare, ...	5 cents.

PROPER ADDRESS OF THE COMPANY.

REVERE STREET RAILWAY COMPANY,
REVERE, MASS.

OFFICE: 82 DEVONSHIRE STREET, BOSTON.

NAME AND RESIDENCE OF OFFICERS.

Washington G. Benedict, *President*, Boston, Mass. William A. Boland, *Treasurer and Clerk of Corporation*, Lynn, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Washington G. Benedict, Boston, Mass. William A. Boland, Lynn, Mass. Arthur D. McClellan, Boston, Mass. Alfred S. Foster, Chelsea, Mass. Charles S. Fifield, Revere, Mass. Charles H. Coffin, Newburyport, Mass. Horace B. Parker, Newton, Mass. Harvey N. Shepard, East Boston, Mass. Charles H. Thayer, Boston, Mass.

WASHINGTON G. BENEDICT,
ARTHUR D. McCLELLAN,
WM. A. BOLAND,
CHAS. H. COFFIN,
CHARLES S. FIFIELD,
A. S. FOSTER,
CHAS. H. THAYER,
Directors.

WILLIAM A. BOLAND,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 7, 1888. Then personally appeared Washington G. Benedict, Arthur D. McClellan, Charles S. Fifield, A. S. Foster, Charles H. Thayer and William A. Boland, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

CHARLES J. PAGE,
Justice of the Peace.

REPORT

OF THE

SOMERVILLE HORSE RAILROAD COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

[This road is leased to and operated by the West End Street Railway Company.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$153,000 00	
Capital stock authorized by votes of company,	153,000 00	
Capital stock paid (par value of shares, $50),		$153,000 00
Number of stockholders,	121	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$153,000 00
TOTAL PROPERTY AND ASSETS OF COMPANY,		153,000 00
REVENUE FOR THE YEAR.		
Received from other railways as tolls or rent:		$9,180 00
Cambridge Railroad Company,	$4,140 00	
Consolidated Railroad Company,	450 00	
West End Street Railway Company,	4,590 00	
TOTAL INCOME FROM ALL SOURCES,		$9,180 00
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$9,180 00
Dividends declared (6 per cent.) for the year,		9,180 00

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$153,000 00
TOTAL ASSETS,	$153,000 00
LIABILITIES.	
Capital stock,	$153,000 00
TOTAL LIABILITIES,	$153,000 00

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.	
To dividends,	$9,180 00
	$9,180 00

Cr.	
By total income,	$9,180 00
	$9,180 00

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	4.879 miles.
Aggregate length of switches, sidings, etc.,	.526 "
Total length of track, measured as single track,	5.405 "

Proper Address of the Company.

SOMERVILLE HORSE RAILROAD COMPANY,
81 Milk Street (Room 42), Boston, Mass.

Name and Residence of Officers.

Samuel E. Sewall, *President*, Melrose, Mass. John H. Studley, Jr., *Treasurer and Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors last Elected.

Samuel E. Sewall, Melrose, Mass. Charles E. Powers, Boston, Mass.
Reuben E. Demmon, Boston, Mass. Josiah Q. Bennett, Boston, Mass.
John H. Studley, Jr., Boston, Mass.

SAMUEL E. SEWALL,
President.
CHARLES E. POWERS,
JOSIAH Q. BENNETT,
JOHN H. STUDLEY, Jr.,
R. E. DEMMON,
Directors.
JOHN H. STUDLEY, Jr.,
Treasurer.

Commonwealth of Massachusetts.

Suffolk, ss. Nov. 5, 1888. Then personally appeared Samuel E. Sewall, Charles E. Powers, Josiah Q. Bennett and John H. Studley, Jr., and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

C. P. JUDD,
Justice of the Peace.

Commonwealth of Massachusetts.

Suffolk, ss. Nov. 5, 1888. Then personally appeared Reuben E. Demmon, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

S. F. WILKINS,
Justice of the Peace.

REPORT

OF THE

SOUTH BOSTON STREET RAILWAY COMPANY,

FOR THE PERIOD ENDING NOVEMBER 12, 1887.

[This company was consolidated with the West End Street Railway Company Nov. 12, 1887, under the authority of chapter 413 of the Acts of 1887.]

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$750,000 00	
Capital stock authorized by votes of company,	750,000 00	
Capital stock paid (par value of shares, $50),		$750,000 00
Number of stockholders,	9	
DEBT.		
Funded debt, as follows:		$200,000 00
Bonds due 1905, rate of interest 5 per cent.,	$200,000 00	
Unfunded debt, as follows:		178,334 46
Notes payable,	$144,500 00	
Accounts payable,	33,834 46	
TOTAL GROSS DEBT,		$378,334 46
Amount of cash assets, viz.:		13,672 49
Cash,	$5,616 87	
Supplies,	3,717 51	
Debit balances,	4,338 11	
NET DEBT,		$364,661 97
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$326,857 99
EQUIPMENT.		
Horses,		$145,062 50
Cars,		168,460 00
Other articles of equipment,		38,727 84
TOTAL COST OF EQUIPMENT,		$352,250 34
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$363,493 61
TOTAL COST OF LAND AND BUILDINGS,		$363,493 61

OTHER PROPERTY.		
House and lot on Fourth Street,		$10,000 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$1,052,601 94
Cash assets,		13,672 49
TOTAL PROPERTY AND ASSETS OF COMPANY,		$1,066,274 43
PROPERTY ACCOUNTS: CHARGES AND CREDITS TO NOV. 12, 1887.		
Extension of tracks,		$24,119 85
Other equipment,		5,255 00
TOTAL ADDITION TO PROPERTY,		$29,374 85
Property sold or reduced in valuation on the books, viz.:		3,437 50
Horses sold,	$3,437 50	
NET ADDITION TO PROPERTY TO NOV. 12, 1887,		$25,937 35
REVENUE TO NOV. 12, 1887.		
Received from passengers on railways operated by this company,		$68,405 72
Received from other railways as tolls or rent,		1,256 71
Received from sales of manure,		130 00
TOTAL EARNINGS,		$69,792 43
Income from other sources:		297 15
Rents,	$45 83	
Advertising,	166 66	
Miscellaneous,	84 66	
TOTAL INCOME FROM ALL SOURCES,		$70,089 58
EXPENSES OF OPERATING THE RAILWAY TO NOV. 12, 1887.		
Repairs of road-bed and track,		$7,793 36
Repairs of cars and other vehicles, harness and horse-shoeing,		8,083 17
Repairs of buildings,		369 96
Renewal of horses,		3,207 50
Wages and salaries of president, treasurer, superintendent and their clerks,		1,389 98
Wages and salaries of all other persons employed in operating the road,		27,239 76
Provender,		3,921 04
Rent and tolls paid other companies for use of their roads:		1,075 00
Metropolitan Railroad Company,	$1,075 00	
Insurance,		3,330 32
Damages for injuries to persons and property,		1,521 02
Office expenses, and all other expenses not included above,		5,872 60
TOTAL EXPENSES OF OPERATING,		$63,803 71
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$6,285 87
Interest paid during the year,		396 65
Balance for the year, or surplus,		5,889 22
Deficit at commencement of year,		67,949 25
TOTAL DEFICIT NOV. 12, 1887,		$62,060 03

General Balance Sheet Nov. 12, 1887.

ASSETS.

Construction,	$326,857 99
Equipment,	352,250 34
Land and buildings,	363,493 61
Other property,	10,000 00
Cash and cash assets,	13,672 49
Deficit,	62,060 03
TOTAL ASSETS,	$1,128,334 46

LIABILITIES.

Capital stock,	$750,000 00
Funded debt,	200,000 00
Unfunded debt,	178,334 46
TOTAL LIABILITIES,	$1,128,334 46

General Balance Sheet as changed by Subsequent Entries made in Profit and Loss Account to adjust Accounts, with Inventories and Entries made as of Date of Transfer to the West End Street Railway Company.

ASSETS.

Construction,	$326,857 99
Horses,	135,955 50
Cars,	166,760 00
Equipment,	38,727 84
Land and buildings,	363,493 61
Other property,	10,000 00
Cash and cash assets,	12,324 99
Deficit,	124,966 51
TOTAL ASSETS,	$1,179,086 44

LIABILITIES.

Capital stock,	$750,000 00
Funded debt,	200,000 00
Unfunded debt,	178,334 46
Bills and accounts outstanding Nov. 12, 1887, less value of materials found to be on hand,	50,751 98
TOTAL LIABILITIES,	$1,179,086 44

Copy of Profit and Loss Account to Nov. 12, 1887.

DR.

To balance Sept. 30, 1887,	$67,949 25
expenses,	63,803 71
interest,	396 65
	$132,149 61

CR.

By total income,	$70,089 58
Balance carried forward,	62,060 03
	$132,149 61

Subsequent Entries made to adjust Accounts, with Inventories as of Date of Transfer to the West End Street Railway Company.	
Dr.	
To balance brought down,	$62,060 03
2 box cars, condemned as worthless,	1,700 00
reduction in value of horses as shown on the books, to correspond with inventory value of same,	9,107 00
uncollectible accounts,	1,347 50
outstanding bills, unsettled claims, accrued interest and taxes, not entered upon the books at date of transfer, less materials found to be on hand,	50,751 98
	$124,966 51
Cr.	
By balance as of Nov. 12, 1887, carried forward,	$124,966 51
	$124,966 51

Miles Run, etc., to Nov. 12, 1887.	
Total number of miles run,	168,078
Total number of passengers carried in the cars,	1,221,880
Total number of round trips,	25,962
Number of persons regularly employed by company,	435
Rates of fare,	5 cents.

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	1	-	1
Employees,	-	-	-	-	-	-
Others,	-	1	-	-	-	1

Statement of Each Accident.

Oct. 18, 1887. — Boy run over by car.

October 27. — Woman fell getting off car.

Proper Address of the Company.

SOUTH BOSTON RAILROAD COMPANY,

81 Milk Street, Boston, Mass.

Name and Residence of Officers.

Jarvis D. Braman, *President*, Boston, Mass. Grenville D. Braman, *Treasurer*, Cohasset, Mass. Elmer P. Howe, *Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Jarvis D. Braman, Boston, Mass. G. T. W. Braman, Cohasset, Mass. Grenville D. Braman, Cohasset, Mass. M. F. Dickinson, Jr , Boston, Mass. Elmer P. Howe, Boston, Mass. Henry D. Hyde, Boston, Mass. Henry M. Whitney, Boston, Mass.

G. T. W. BRAMAN,
HENRY M. WHITNEY,
GRENVILLE D. BRAMAN,
HENRY D. HYDE,
ELMER P. HOWE,
Directors.

GRENVILLE D. BRAMAN,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 14, 1888. Then personally appeared said G. T. W. Braman, Henry M. Whitney, Grenville D. Braman, Henry D. Hyde and Elmer P. Howe, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

Before me, PRENTISS CUMMINGS,
Justice of the Peace.

REPORT

OF THE

SPRINGFIELD STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$350,000 00	
Capital stock authorized by votes of company,	350,000 00	
Capital stock paid (par value of shares, $100),		$350,000 00
Number of stockholders,	96	
DEBT.		
Unfunded debt as follows:		$4,610 01
Bills payable,	$1,357 25	
Unredeemed tickets,	3,252 76	
TOTAL GROSS DEBT,		$4,610 01
Amount of cash assets, viz.:		28,671 95
Cash,	$16,474 82	
Supplies,	9,868 06	
Debit balances,	2,329 07	
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$202,491 34
EQUIPMENT.		
Horses,		$31,829 66
Cars,		43,623 41
Other articles of equipment,		8,715 68
TOTAL COST OF EQUIPMENT,		$84,168 75
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$112,898 04
TOTAL COST OF LAND AND BUILDINGS,		$112,898 04
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$399,558 13
Cash assets,		28,671 95
TOTAL PROPERTY AND ASSETS OF COMPANY,		$428,230 08

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (number of feet, 24,706.55),		$49,755 80
New horses (number, 32),		4,800 00
New cars (number, 10),		8,210 00
Other equipment,		3,238 88
Land and buildings,		15,045 94
TOTAL ADDITION TO PROPERTY,		$81,050 62
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$138,984 87
Received from sales of manure,		734 99
TOTAL EARNINGS,		$139,719 86
Income from other sources:		6,060 66
Received for building extension,	$895 00	
Rents,	3,975 73	
Interest,	889 93	
Advertising,	300 00	
TOTAL INCOME FROM ALL SOURCES,		$145,780 52
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$8,297 14
Repairs of cars and other vehicles, harness and horse-shoeing,		9,781 81
Repairs of buildings,		498 25
Renewal of horses,		3,182 50
Wages and salaries of president, treasurer, superintendent and their clerks,		5,820 00
Wages and salaries of all other persons employed in operating the road,		49,841 82
Provender,		26,055 95
Taxes, State and local,		6,087 65
Insurance,		930 54
Damages for injuries to persons and property,		5,223 45
Office expenses, and all other expenses not included above,		3,015 95
TOTAL EXPENSES OF OPERATING,		$118,735 06
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$27,045 46
Dividends declared (8 per cent. on $300,000.00) for the year,		24,000 00
Balance for the year, or surplus,		3,045 46
Surplus at commencement of year,		70,574 61
TOTAL SURPLUS SEPT. 30, 1888,		$73,620 07
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		35
Open cars,		21
Horses,		230
Harnesses (pairs of),		50
Omnibuses,		5
Sleighs,		5
Other articles of equipment:		6
Three snow-ploughs, 1 wagon, 2 carts.		
Largest number of horses owned at any time during the year,		230
Smallest number of horses owned at any time during the year,		198
Average number of horses owned during the year,		214

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$202,491 34
Equipment,	84,168 75
Land and buildings,	112,898 04
Cash and cash assets,	28,671 95
TOTAL ASSETS,	$428,230 08

LIABILITIES.

Capital stock,	$350,000 00
Unfunded debt,	4,610 01
Surplus,	73,620 07
TOTAL LIABILITIES,	$428,230 08

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To expenses,	$118,735 06
dividends,	24,000 00
Balance carried forward Sept. 30, 1888,	73,620 07
	$216,355 13

CR.

By balance Sept. 30, 1887,	$70,574 61
total income,	145,780 52
	$216,355 13

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	18.09 miles.
Aggregate length of switches, sidings, etc.,	.31 "
Total length of track, measured as single track,	18.40 "
Total length of track paved,	18.40 "

Weight of rail per yard, and description of rail: 35 and 50 pounds per yard; steel tram rail 35 pounds; steel T rail 50 pounds.

Description of the several lines or routes operated by the company:

From Chicopee Centre, on Centre Street in Chicopee, to Main Street, Springfield, on Main Street to Locust Street, on Locust Street to Mill River.

Main and State streets.

Main and State streets and St. James Avenue.

Main, State, Walnut and King streets.

Carew, Chestnut, Lyman, Main, State, Maple and Central streets.

From corner State and Main streets, on Main and Bridge streets, Connecticut River Bridge; in West Springfield, on Bridge, Main, Park and Elm streets.

From Church Street, in Chicopee Falls, on Front Street, Centre, Grove, Front streets; in Chicopee, on Front Street, Market Square and Exchange Street.	
From Mill River, on Locust Street, Main, Lyman, Chestnut, Worthington streets.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . .	18.09 miles.

MILES RUN, ETC.

Total number of miles run during the year, ...	475,352
Total number of passengers carried in the cars, . . .	2,714,653
Total number of round trips for the year, ...	93,023
Number of persons regularly employed by company, . .	122
Rates of fare: 6 cents, single fare; 5 tickets for 25 cents.	

LIST OF ACCIDENTS.

	FROM CAUSES BEYOND THEIR OWN CONTROL.		FROM THEIR OWN MISCONDUCT OR CARELESSNESS.		TOTAL.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	2	-	1	-	3
Employees, ...	-	-	1	-	1	-
Others, ...	-	-	-	-	-	-

STATEMENT OF EACH ACCIDENT.

Nov. 10, 1887. — A car, while descending a six per cent. grade, had occasion to stop, and was run into by a car following it. A man on the rear platform was struck by the car pole and somewhat injured. A lady jumped from the rear car while it was in motion and was injured.

December 17. — Car driver (J. L. Jones), while driving rapidly around a curve, was thrown under the car wheel, by the car leaving the rail, and killed.

May 7, 1888. — A lady was thrown down and somewhat injured by car starting while she was in the act of getting off.

PROPER ADDRESS OF THE COMPANY.

SPRINGFIELD STREET RAILWAY COMPANY,

SPRINGFIELD, MASS.

NAME AND RESIDENCE OF OFFICERS.

John Olmsted, *President*, Springfield, Mass. F. E. King, *Superintendent*, Springfield, Mass. A. E. Smith, *Treasurer*, Springfield, Mass. Gideon Wells, *Clerk of Corporation*, Springfield, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

John Olmsted, Springfield, Mass. G. M. Atwater, Springfield, Mass. James Kirkham, Springfield, Mass. Gideon Wells, Springfield, Mass. A. E. Smith, Springfield, Mass.

JOHN OLMSTED,
G. M. ATWATER,
JAMES KIRKHAM,
GIDEON WELLS,
A. E. SMITH,
Directors.
A. E. SMITH,
Treasurer.
F. E. KING,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

HAMPDEN, ss. Oct. 4, 1888. Then personally appeared John Olmsted, George M. Atwater, James Kirkham, Gideon Wells and A. E. Smith, and on October 5, 1888, Frank E. King, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

EDWIN F. LYFORD,
Justice of the Peace.

REPORT

OF THE

SUBURBAN STREET RAILWAY COMPANY,

FOR THE PERIOD ENDING JANUARY 28, 1888.

[This road was united with the West End Street Railway Company, by purchase and consolidation, Jan. 28, 1888.]

CAPITAL STOCK AND DEBT.			
CAPITAL STOCK.			
Capital stock authorized by charter, . .		$150,000 00	
Capital stock authorized by votes of company,		150,000 00	
Capital stock paid (par value of shares, $50), . . .			$150,000 00
Number of stockholders, ...		14	
DEBT.			
Amount of cash assets, viz.:			$100,174 58
Cash, ...		$100,174 58	
PERMANENT INVESTMENTS.			
RAILWAY.			
Grading and paving, ...		$21,440 00	
Track, including timber, rails, etc., and laying,		24,037 50	
Engineering, agencies, salaries, and other expenses during construction, . . .	$4,448 69		
Less interest on bank balances, .	100 77		
		4,347 92	
TOTAL COST OF CONSTRUCTION, ...			$49,825 42
TOTAL AMOUNT OF PERMANENT INVESTMENTS, . .			$49,825 42
Cash assets, ...			100,174 58
TOTAL PROPERTY AND ASSETS OF COMPANY, . . .			$150,000 00
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.			
Extension of tracks (number of feet, 12,200), . . .			$35,825 42
NET ADDITION TO PROPERTY FOR THE YEAR, . .			$35,825 42

General Balance Sheet Jan. 28, 1888.	
Assets.	
Construction,	$49,822 42
Cash and cash assets,	100,174 58
Total Assets,	$150,000 00
Liabilities.	
Capital stock,	$150,000 00
Total Liabilities,	$150,000 00

Proper Address of the Company.

SUBURBAN STREET RAILWAY COMPANY,
Equitable Building, Boston, Mass.

Name and Residence of Officers.

Henry M. Whitney, *President*, Brookline, Mass. Grenville D. Braman, *Treasurer*, Cohasset, Mass. Elmer P. Howe, *Clerk of Corporation*, Boston, Mass.

Name and Residence of Directors last Elected.

Henry M. Whitney, Brookline, Mass. Jarvis D. Braman, Boston, Mass. Henry D. Hyde, Boston, Mass. G. T. W. Braman, Cohasset, Mass. Jonas H. French, Boston, Mass. Isaac T. Burr, Boston, Mass. S. W. Brown, Boston, Mass.

G. T. W. BRAMAN,
I. T. BURR,
HENRY M. WHITNEY,
HENRY D. HYDE,
Directors.

GRENVILLE D. BRAMAN,
Treasurer.

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Nov. 14, 1888. Then personally appeared said G. T. W. Braman, I. T. Burr, Henry M. Whitney, Henry D. Hyde and Grenville D. Braman, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

PRENTISS CUMMINGS,
Justice of the Peace.

REPORT

OF THE

TAUNTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$100,000 00	
Capital stock authorized by votes of company,	100,000 00	
Capital stock paid (par value of shares, $100),		$100,000 00
Number of stockholders,	182	
DEBT.		
Unfunded debt, as follows:		$30,000 00
Notes payable,	$30,000 00	
TOTAL GROSS DEBT,		$30,000 00
Amount of cash assets, viz.:		1,818 43
Cash,	$1,818 43	
NET DEBT,		$28,181 57
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$72,600 18
EQUIPMENT.		
Horses,		$12,555 93
Cars,		19,797 11
Other articles of equipment,		2,396 41
TOTAL COST OF EQUIPMENT,		$34,749 45
LAND AND BUILDINGS.		
Land and buildings owned by company needed in operating road,		$25,588 92
TOTAL COST OF LAND AND BUILDINGS,		$25,588 92
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$132,938 55
Cash assets,		1,818 43
TOTAL PROPERTY AND ASSETS OF COMPANY,		$134,756 98

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks,		$21,867 75
New horses,		4,442 53
New cars,		110 61
Other equipment,		509 69
Land and buildings,		17,148 99
TOTAL ADDITION TO PROPERTY,		$44,079 57
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$38,358 64
TOTAL INCOME FROM ALL SOURCES,		$38,358 64
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$1,863 66
Repairs of cars and other vehicles, harness and horse-shoeing,		4,934 39
Repairs of buildings,		29 12
Wages and salaries of president, treasurer, superintendent and their clerks,		1,700 00
Wages and salaries of all other persons employed in operating the road,		12,702 76
Provender,		11,098 87
Taxes, State and local,		1,046 08
Insurance,		550 70
Office expenses, and all other expenses not included above,		2,440 81
TOTAL EXPENSES OF OPERATING,		$36,366 39
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$1,992 25
Interest accrued during the year,		977 57
Balance for the year, or surplus,		1,014 68
Surplus at commencement of year,	$7,342 30	
Deduct: Dividend paid October, 1887,	3,600 00	
Surplus at commencement of year, as changed by aforesaid entries,		3,742 30
TOTAL SURPLUS SEPT. 30, 1888,		$4,756 98
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		13
Open cars,		10
Horses,		101
Harnesses (pairs of),		24
Largest number of horses owned at any time during the year,		120
Smallest number of horses owned at any time during the year,		101
Average number of horses owned during the year,		103

General Balance Sheet Sept. 30, 1888.

ASSETS.	
Construction,	$72,600 18
Equipment,	34,749 45
Land and buildings,	25,588 92
Cash and cash assets,	1,818 43
TOTAL ASSETS,	$134,756 98

Liabilities.	
Capital stock,	$100,000 00
Unfunded debt,	30,000 00
Surplus,	4,756 98
Total Liabilities,	$134,756 98

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$36,366 39
interest,	977 57
dividends,	3,600
Balance carried forward Sept. 30, 1888,	4,756 98
	$45,700 94
Cr.	
By balance Sept. 30, 1887,	$7,342 30
total income,	38,358 64
	$45,700 94

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	7.3895 miles.
Aggregate length of switches, sidings, etc.,	1.2953 "
Total length of track measured as single track,	8.6848 "
Total length of track paved,	5.0465 "
Weight of rail per yard, and description of rail: 24, 25, 38 and 54 pounds.	
Description of the several lines or routes operated by the company:	
Weir to Whittenton.	
City Hall to Highland Street.	
City Hall to Agricultural Fair Grounds.	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	7.3895 miles.
Miles Run, etc.	
Total number of miles run during the year,	180,500
Total number of passengers carried in the cars,	789,784
Total number of round trips for the year,	49,257
Number of persons regularly employed by company,	28
Rates of fare: 5 cents, and commuted fare under special contract, 3 cents.	

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers,	-	-	-	-	-	-
Employees,	-	-	-	-	-	-
Others,	-	-	1	-	1	-

STATEMENT OF EACH ACCIDENT.

Nov. 18, 1887. — Wm. O. Satthouse, a boy about six years old, carelessly running before a car, stumbled and fell, and was run over and killed.

PROPER ADDRESS OF THE COMPANY.

TAUNTON STREET RAILWAY COMPANY,
TAUNTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

Wm. C. Lovering, *President*, Taunton, Mass. Geo. C. Morse, *Superintendent*, Taunton, Mass. Henry M. Lovering, *Treasurer*, Taunton, Mass. Orville A. Barker, *Clerk of Corporation*, Taunton, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Henry G. Reed, Taunton, Mass. A. J. Barker, Taunton, Mass. Wm. C. Lovering, Taunton, Mass. Wm. H. Phillips, Taunton, Mass. Henry M. Lovering, Taunton, Mass. P. I. Perrin, Taunton, Mass. Chas. Foster, Taunton, Mass. N. H. Skinner, Taunton, Mass. S. N. Staples, Taunton, Mass. Ezra Davol, Taunton, Mass.

WILLIAM C. LOVERING,
N. H. SKINNER,
S. N. STAPLES,
HENRY G. REED,
CHARLES FOSTER,
P. I. PERRIN,
A. J. BARKER,
HENRY M. LOVERING,
Directors.

HENRY M. LOVERING,
Treasurer.

GEO. C. MORSE,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

BRISTOL, ss. Oct. 15, 1888. Then personally appeared William C. Lovering, N. H. Skinner, S. N. Staples, Henry G. Reed, Charles Foster, P. I. Perrin and A. J. Barker, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

HENRY M. LOVERING,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

BRISTOL, ss. Oct. 19, 1888. Then personally appeared Henry M. Lovering, and made oath to the truth of the foregoing statement by him subscribed, according to his best knowledge and belief.

EDWARD S. HUSEY,
Justice of the Peace.

REPORT

OF THE

UNION STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$260,000 00	
Capital stock authorized by votes of company,	260,000 00	
Capital stock paid (par value of shares, $100),		$260,000 00
Number of stockholders,	162	
DEBT.		
Funded debt, as follows:		$93,000 00
First mortgage bonds due July 2, 1898, rate of interest 5 per cent.,	$93,000 00	
Unfunded debt, as follows:		1,942 50
Accounts payable,	$780 00	
Interest accrued, not due,	1,162 50	
TOTAL GROSS DEBT,		$94,942 50
Amount of cash assets, viz.:		14,127 84
Cash,	$3,439 00	
Supplies,	2,629 59	
Debit balances,	8,059 25	
NET DEBT,		$80,814 66
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$199,750 46	
Interest during construction, commissions, discounts, etc.,	3,295 86	
Engineering, agencies, salaries, and other expenses during construction,	2,614 90	
TOTAL COST OF CONSTRUCTION,		$205,661 22
EQUIPMENT.		
Horses,		$33,636 66
Cars,		53,240 32
Other articles of equipment,		6,941 37
TOTAL COST OF EQUIPMENT,		$93,818 35
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$22,811 90
Buildings owned by company needed in operating road,		46,131 72
TOTAL COST OF LAND AND BUILDINGS,		$68,943 62

TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$368,423 19
Cash assets,		14,127 84
TOTAL PROPERTY AND ASSETS OF COMPANY,		$382,551 03
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks,		$605 11
Other equipment,		338 00
TOTAL ADDITION TO PROPERTY,		$943 11
Property sold or reduced in valuation on the books, viz.:		1,612 41
Horses sold,	$314 00	
Cars sold,	1,298 41	
NET REDUCTION TO PROPERTY FOR THE YEAR,		$669 30
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$114,621 38
Received from mails and express,		59 51
Received from sales of manure,		2,379 55
TOTAL EARNINGS,		$117,060 44
Income from other sources:		527 16
Advertising in cars,	$325 00	
Rents,	102 16	
Fairhaven fire department, for use of horses,	100 00	
TOTAL INCOME FROM ALL SOURCES,		$117,587 60
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$3,514 10
Repairs of cars and other vehicles, harness and horse-shoeing,		6,598 41
Repairs of buildings,		280 48
Wages and salaries of president, treasurer, superintendent and their clerks,		3,405 00
Wages and salaries of all other persons employed in operating the road,		47,855 90
Provender,		26,459 22
Taxes, State and local,		2,764 15
Insurance,		1,302 86
Damages for injuries to persons and property,		201 38
Office expenses, and all other expenses not included above,		3,591 31
TOTAL EXPENSES OF OPERATING,		$95,972 81
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$21,614 79
Interest accrued during the year,		5,607 83
Balance for the year, or surplus,		16,006 96
Surplus at commencement of year,	$12,738 21	
Deduct:		
New Bedford and Fairhaven Street Railway bills paid,	$459 22	
Acushnet Street Railway bills paid,	677 42	
Surplus at commencement of year as changed by aforesaid entries,		11,601 57
TOTAL SURPLUS SEPT. 30, 1888,		$27,608 53

Inventory of Equipment Sept. 30, 1888.	
Box cars,	41
Open cars,	37
Horses,	253
Harnesses (pairs of),	64
Sleighs,	3
Other articles of equipment:	
Two snow-ploughs, 6 snow-sleds, 2 express wagons, 1 tip-cart, 1 heavy wagon, 1 buggy.	
Largest number of horses owned at any time during the year,	276
Smallest number of horses owned at any time during the year,	248
Average number of horses owned during the year,	264

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$205,661 22
Equipment,	93,818 35
Land and buildings,	68,943 62
Cash and cash assets,	14,127 84
Total Assets,	$382,551 03

Liabilities.	
Capital stock,	$260,000 00
Funded debt,	93,000 00
Unfunded debt,	1,942 50
Surplus,	27,608 53
Total Liabilities,	$382,551 03

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

Dr.	
To expenses,	$95,972 81
interest,	5,607 83
New Bedford and Fairhaven Street Railway bills paid,	459 22
Acushnet Street Railway bills paid,	677 42
Balance carried forward Sept. 30, 1888,	27,608 53
	$130,325 81

Cr.	
By balance Sept. 30, 1887,	$12,738 21
total income,	117,587 60
	$130,325 81

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	14.849 miles.
Aggregate length of switches, sidings, etc.,	1.533 "
Total length of track, measured as single track,	16.382 "
Total length of track paved,	15.110 "
Weight of rail per yard, and description of rail: 3.840 steel, 50 pounds; 1.417 steel, 35 pounds; 1.370 iron, 45 pounds; 1.097 iron, 35 pounds; 7.125 steel, 38½ pounds, Johnson.	

Description of the several lines or routes operated by the company:	
Main Line.	
From Lund's Corner, through Acushnet Avenue, Purchase, Fourth, Rivet and Water streets and French Avenue to Woodlawn Grove; from Fourth, through Potomska and Water streets to Rivet Street; from Pearl Street, through Acushnet Avenue to Union Street.	
Mount Pleasant and Dartmouth Street Line.	
From Mount Pleasant Street, through Durfee, Cedar, Morgan, Ash, Union streets and Acushnet Avenue, Bedford, Green, Allen and Dartmouth streets to Rural Cemetery.	
Fairhaven Line.	
From Parker Street, through Summer, Elm, Sixth, William, Second and Middle streets, across the bridge and through Main, Church and Fort streets to Fort Phœnix, with branch from Main Street to Old Colony Depot, and branch from Bridge Street, on North Main Street, to Oxford Village.	
Kempton Street Line.	
On Kempton Street, from Cedar Street to Rockdale Avenue.	
Total length of railway measured as single track, not including sidings, etc., operated by this company, . . .	14.849 miles.
Miles Run, etc.	
Total number of miles run during the year, ...	505,238
Total number of passengers carried in the cars (including 133,940 free transfers), ...	2,540,671
Total number of round trips for the year, ...	118,100
Number of persons regularly employed by company, . .	95
Rate of fare, ...	5 cents.

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	1	-	1	-	2
Employees, ...	-	-	-	-	-	-
Others, ...	-	-	-	2	-	2

Statement of Each Accident.

Oct. 10, 1887. — Car jumped track at curve; lady in car slightly injured.

April 18, 1888. — Lady, in attempting to board a car that was just starting, was thrown down.

June 16. — Boy stepped in front of horses, and was run over and leg broken.

June 26. — Car scraped against wheel to a low gear; the noise frightened the horse, and he ran into another team; man thrown out of first team.

PROPER ADDRESS OF THE COMPANY.

UNION STREET RAILWAY COMPANY,
NEW BEDFORD, MASS.

NAME AND RESIDENCE OF OFFICERS.

Samuel C. Hart, *President*, New Bedford, Mass. Wm. H. Allen, *Superintendent of Transportation and Clerk of Corporation*, New Bedford, Mass. Chas. E. Cook, *Superintendent of Equipment*, New Bedford, Mass. Andrew G. Pierce, *Treasurer*, New Bedford, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

Samuel C. Hart, New Bedford, Mass. William W. Crapo, New Bedford, Mass. Andrew G. Pierce, New Bedford, Mass. Jonathan Bourne, New Bedford, Mass. Abbott P. Smith, New Bedford, Mass. Jos. A. Beauvais, New Bedford, Mass. Charles E. Cook, New Bedford, Mass. Charles H. Gifford, New Bedford, Mass. Weston Howland, Fairhaven, Mass.

SAM'L C. HART,
A. P. SMITH,
WESTON HOWLAND,
WM. W. CRAPO,
JOS. A. BEAUVAIS,
CHAS. H. GIFFORD,
ANDREW G. PIERCE,
Directors.

ANDREW G. PIERCE,
Treasurer.

WILLIAM H. ALLEN,
Superintendent.

COMMONWEALTH OF MASSACHUSETTS.

BRISTOL, ss. Oct. 24, 1888. Then personally appeared Samuel C. Hart, A. P. Smith, Weston Howland, William W. Crapo, Joseph A. Beauvais, Charles H. Gifford, Andrew G. Pierce and William H. Allen, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

HOSEA M. KNOWLTON,
Justice of the Peace.

REPORT

OF THE

WALTHAM & NEWTON STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$30,000 00	
Capital stock authorized by votes of company,	30,000 00	
Capital stock paid (par value of shares, $100),		$30,000 00
Number of stockholders,	90	
DEBT.		
Unfunded debt, as follows:		$15,400 00
Bills payable,	$15,400 00	
TOTAL GROSS DEBT,		$15,400 00
Amount of cash assets, viz.:		2,988 68
Cash,	$2,988 68	
NET DEBT,		$12,411 32
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION,		$37,493 41
EQUIPMENT.		
Horses,		$2,500 00
Cars,		6,459 75
Other articles of equipment,		1,064 62
TOTAL COST OF EQUIPMENT,		$10,024 37
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$500 00
Buildings owned by company needed in operating road,		3,267 57
TOTAL COST OF LAND AND BUILDINGS,		$3,767 57
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$51,285 35
Cash assets,		2,988 68
TOTAL PROPERTY AND ASSETS OF COMPANY,		$54,274 03
PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
New cars (number, 1),		$662 50
Land and buildings,		318 69
TOTAL ADDITION TO PROPERTY,		$981 19

Revenue for the Year.	
Received from passengers on railways operated by this company,	$14,513 35
Received from mails,	50 00
Received from sales of manure,	100 00
Total Income from all Sources,	$14,663 35
Expenses of Operating the Railway for the Year.	
Repairs of road-bed and track,	$1,571 55
Repairs of cars and other vehicles and harness,	309 85
Wages and salaries of president, treasurer, superintendent and their clerks,	945 00
Wages and salaries of all other persons employed in operating the road,	4,667 54
Provender,	2,657 53
Taxes, State and local,	37 26
Insurance,	101 00
Office expenses, and all other expenses not included above,	1,742 01
Total Expenses of Operating,	$12,031 74
Net Income, Dividends, etc.	
Total Net Income above Operating Expenses,	$2,631 61
Balance for the year, or surplus,	2,631 61
Surplus at commencement of year,	6,242 42
Total Surplus Sept. 30, 1888,	$8,874 03
Inventory of Equipment Sept. 30, 1888.	
Box cars,	5
Open cars,	4
Horses,	21
Harnesses (pairs of),	7
Omnibuses,	2
Sleighs,	3
Largest number of horses owned at any time during the year,	24
Smallest number of horses owned at any time during the year,	20
Average number of horses owned during the year,	21

General Balance Sheet Sept. 30, 1888.

Assets.	
Construction,	$37,493 41
Equipment,	10,024 37
Land and buildings,	3,767 57
Cash and cash assets,	2,988 68
Total Assets,	$54,274 03
Liabilities.	
Capital stock,	$30,000 00
Unfunded debt,	15,400 00
Surplus,	8,874 03
Total Liabilities,	$54,274 03

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.	
Dr.	
To expenses,	$12,031 74
Balance carried forward Sept. 30, 1888,	8,874 03
	$20,905 77
Cr.	
By balance Sept. 30, 1887,	$6,242 42
total income,	14,663 35
	$20,905 77

Description of Railway.	
Length of railway owned by company, measured as a single track, exclusive of sidings,	3.211 miles.
Aggregate length of switches, sidings, etc.,	.190 "
Total length of track, measured as single track,	3.401 "
Total length of track paved,	2,100 feet.
Total length of railway measured as single track, not including sidings, etc., operated by this company,	3.211 miles.
Miles Run, etc.	
Total number of miles run during the year,	43,680
Total number of passengers carried in the cars,	277,447
Total number of round trips for the year,	6,753
Number of persons regularly employed by company,	9
Rates of fare: 6 cents; 5 tickets for 25 cents.	

Proper Address of the Company.

WALTHAM & NEWTON STREET RAILWAY COMPANY,

Waltham, Mass.

Name and Residence of Officers.

R. E. Robbins, *President*, Boston, Mass. Henry Bond, *Superintendent, Treasurer and Clerk of Corporation*, Waltham, Mass.

Name and Residence of Directors last Elected.

R. E. Robbins, Boston, Mass. G. E. Allen, West Newton, Mass. Royal Robbins, Boston, Mass. F. Buttrick, Waltham, Mass. C. M. Bodge, Waltham, Mass. H. P. Sherman, Waltham, Mass. Geo. H. Shirley, Waltham, Mass. L. C. Lane, Waltham, Mass. Henry Bond, Waltham, Mass.

ROYAL E. ROBBINS,
ROYAL ROBBINS,
G. H. SHIRLEY,
L. C. LANE,
HENRY BOND,
CHARLES M. BODGE,
Directors.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. Oct. 24, 1888. Then personally appeared R. E. Robbins, Royal Robbins, G. H. Shirley, L. C. Lane, Henry Bond and Chas. M. Bodge, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

HENRY N. FISHER,
Justice of the Peace.

REPORT

OF THE

WEST END STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter { common,	$544,000 00	
{ preferred,	6,400,000 00	
Capital stock paid (par value of shares, $50), (common, $421,100.00; preferred, $6,400,000.00), ...		$6,821,100 00
Number of stockholders { common, . . .	16	
{ preferred, . . .	2,085	
DEBT.		
Funded debt, as follows: *		$3,747,442 12
Six per cent. bonds, due in 1897, . . .	$700,000 00	
Six per cent. bonds, due in 1898, . . .	100,000 00	
Five per cent. bonds, due in 1902, . .	300,000 00	
Five per cent. bonds, due in 1903, . .	1,100,000 00	
Five per cent. bonds, due in 1904, . .	350,000 00	
Five per cent. bonds, due in 1905, . .	200,000 00	
Five per cent. bonds, due in 1907, . .	500,000 00	
Mortgage notes, ...	497,442 12	
Unfunded debt, as follows:		1,564,178 22
Notes payable, ...	$1,095,559 26	
Vouchers, pay rolls and accounts, . .	346,201 15	
Accrued interest not yet due, . . .	70,018 87	
Dividends and coupons not called for, .	9,054 50	
Credit balances, ...	43,344 44	
TOTAL GROSS DEBT, ...		$5,311,620 34
Amount of cash assets, viz.:		842,120 52
Cash, ...	$151,146 14	
Supplies, ...	139,901 15	
Debit balances,†	551,073 23	
NET DEBT, ...		$4,469,499 82
PERMANENT INVESTMENTS.		
RAILWAY.		
TOTAL COST OF CONSTRUCTION, ...		$5,019,866 60

* The outstanding bonds of the Cambridge Railroad Company, amounting to $750,000, were mortgage bonds.

† Mostly for accounts transferred from the books of the old corporations for sums expended in redeeming bonds and constructing tracks of other roads.

Equipment.			
Horses,			$1,028,714 64
Cars,			1,182,517 05
Other articles of equipment,			405,881 93
Total Cost of Equipment,			$2,617,113 62
Land and Buildings.			
Land owned by company needed in operating road,			$2,834,408 17
Buildings owned by company needed in operating road,			1,198,323 58
Total Cost of Land and Buildings,			$4,032,731 75
Total Amount of Permanent Investments,			$11,669,711 97
Cash assets,			842,120 52
Total Property and Assets of Company,			$12,511,832 49
Property Accounts: Charges and Credits during the Year.			
Extension of tracks (number of miles, 18.5268),			$309,244 11
New horses (charged to operating expenses).			
New cars (number, 43 box; 61 open),			92,155 00
Other equipment,			16,174 61
Land and buildings,			366,743 42
Property derived through consolidation:			10,899,488 10
Construction: —			
Metropolitan,	$1,748,685 11		
Boston Consolidated,	1,206,701 66		
Cambridge,	1,399,387 31		
South Boston,	326,857 99		
Suburban,	49,825 42		
		$4,731,457 49	
Horses: —			
Metropolitan,	$406,180 10		
Boston Consolidated,	275,158 52		
Cambridge,	211,420 52		
South Boston,	135,955 50		
		1,028,714 64	
Cars: —			
Metropolitan,	$361,904 00		
Boston Consolidated,	346,642 55		
Cambridge,	215,055 50		
South Boston,	166,760 00		
		1,090,362 05	
Equipment: —			
Metropolitan,	$118,980 25		
Boston Consolidated,	119,527 93		
Cambridge,	105,729 57		
South Boston,	38,727 84		
		382,965 59	
Land: —			
Metropolitan,	$1,570,586 88		
Boston Consolidated,	995,219 63		
Cambridge,	726,688 21		
South Boston,	373,493 61		
		3,665,988 33	
Total Addition to Property,			$11,683,805 24

Property sold or reduced in valuation on the books, viz.:		$81,635 61
Cost of construction for account of the Somerville Horse Railroad Company, charged at the time to construction, now charged in account to the Somerville Horse Railroad Company,	$81,635 61	
NET ADDITION TO PROPERTY FOR THE YEAR,		$11,602,169 63
REVENUE FROM NOV. 12, 1887.		
Received from passengers on railways operated by this company,		$4,213,953 61
Received from other railways as tolls or rent:		10,042 64
Lynn & Boston,	$9,678 77	
East Middlesex,	330 68	
North Woburn,	33 19	
Received from sales of manure,		21,138 04
TOTAL EARNINGS,		$4,245,134 29
Income from other sources:		31,196 89
Rents,	$15,734 05	
Advertising,	11,182 19	
Miscellaneous,	4,280 65	
TOTAL INCOME FROM ALL SOURCES,		$4,276,331 18
EXPENSES OF OPERATING THE RAILWAY FROM NOV. 12, 1887.		
Repairs of road-bed and track,		$175,228 06
Repairs of cars and other vehicles, harness and horse-shoeing,		267,010 20
Repairs of buildings, machinery and tools,		72,055 51
Renewal of horses,		78,470 27
Wages and salaries of president, treasurer, superintendent and their clerks,		66,085 15
Wages and salaries of all other persons employed in operating the road,		1,807,156 45
Provender,		615,719 51
Taxes, State and local,		133,269 22
Rent and tolls paid other companies for use of their roads:		8,859 54
Lynn & Boston,	$371 24	
East Middlesex,	73 30	
Somerville,	8,415 00	
Insurance,		11,933 68
Damages for injuries to persons and property,		38,658 11
Office expenses, and all other expenses not included above,		215,294 34
TOTAL EXPENSES OF OPERATING,		$3,489,740 04
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES FOR $10\frac{3}{5}$ MONTHS,		$786,591 14
Interest accrued during $10\frac{3}{5}$ months,		196,079 89
Dividends declared (8 per cent.) for $10\frac{3}{5}$ months, on preferred,		452,266 67
Dividends declared (5 per cent.) for $10\frac{3}{5}$ months, on common,		21,055 00
Balance for the year, or surplus,		117,189 58
Surplus at commencement of year (none).		
Deduct:		
Dividend, balance on preferred stock,	$59,733 33	
Illegally issued South Boston Railroad Company stock, purchased for,	47,280 00	
Add:		
Surplus of assets, as per the accounts of the various roads consolidated with this company,	$368,935 90	

Surplus at commencement of year as changed by aforesaid entries,	$261,922 57
TOTAL SURPLUS SEPT. 30, 1888,	$379,112 15

INVENTORY OF EQUIPMENT SEPT. 30, 1888.

Box cars,	778
Open cars,	806
Horses,	7,684
Harnesses (pairs of), 2,019 double, 381 single,	2,400
Omnibuses,	30
Sleighs, snow-sleds, snow-levellers and pungs,	313
Other articles of equipment: Seventy-eight wagons, 62 carts, 36 carriages, 87 snow-ploughs, 2 horse ambulances, 4 sweepers, 55 anvils, 5,924 blankets, 49 bellows, 691 brushes, 623 bridles, 371 breast chains, 7,797 collars, 1,383 car-eveners; engines, tools and machinery.	
Largest number of horses owned at any time during the year,	8,547
Smallest number of horses owned at any time during the year,	7,684
Average number of horses owned during the year,	8,001

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$5,019,866 60
Equipment,	2,617,113 62
Land and buildings,	4,032,731 75
Cash and cash assets,	842,120 52
TOTAL ASSETS,	$12,511,832 49

LIABILITIES.

Capital stock,	$6,821,100 00
Funded debt,	3,747,442 12
Unfunded debt,	1,564,178 22
Surplus,	379,112 15
TOTAL LIABILITIES,	$12,511,832 49

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To expenses,	$3,489,740 04
interest,	196,089 89
dividends on preferred stock,	512,000 00
dividends on common stock,	21,055 00
illegally issued shares of stock of the South Boston Railroad Company, purchased for,	47,280 00
Balance carried forward Sept. 30, 1888,	379,112 15
	$4,645,267 08

CR.

By total income,	$4,276,331 18
surplus of assets of the various corporations uniting with this company, as per their books and reports as of date of consolidation,	368,935 90
	$4,645,267 08

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	211.62 miles.
Aggregate length of switches, sidings, etc.,	19.20 "
Total length of track, measured as single track,	230.82 "
Total length of track paved,	218.00 "

Description of the several lines or routes operated by the company:

First Division.

Dorchester via Warren and Washington streets to Chelsea Ferry; Dorchester via Warren and Washington streets to Franklin Street; Franklin Park via Hampden Street and Shawmut Avenue to northern depots; Grove Hall via Warren, Washington and Main streets to Charlestown Neck; Grove Hall via Warren Street and Shawmut Avenue to Scollay Square; Grove Hall via Warren Street and Shawmut Avenue to Cornhill; Grove Hall via Warren Street and Harrison Avenue to Post Office Square; Grove Hall via Blue Hill and Shawmut avenues to Cornhill; Maywood Street via Warren Street and Shawmut Avenue to Northern Depots; Maywood Street via Warren Street and Shawmut Avenue to Back Bay churches; Egleston Square via Washington Street to Franklin Street; Forest Hills via Washington Street to Franklin Street; Egleston Square via Washington Street to Forest Hills; Egleston Square via Washington and Northampton streets to Back Bay churches; Bartlett Street via Washington Street to State Street; Bartlett Street via Washington and Hanover streets to East Boston Ferry; Bartlett Street via Washington and Summer streets to Atlantic Avenue; Bartlett Street via Washington and Franklin streets to Atlantic Avenue; Atlantic Avenue Transfer via Franklin and High streets to Atlantic Avenue; Norfolk House via Washington Street to northern depots; Norfolk House via Washington and Tremont streets to Cornhill; Norfolk House via Washington and Northampton streets to Back Bay churches; Norfolk House via Centre Street to Cedar Street; Dudley Street via Shawmut and Columbus avenues to northern depots; Dudley Street via Shawmut and Columbus avenues to Cornhill; Dudley Street via Shawmut and Columbus avenues to Post Office Square; Mount Pleasant via Shawmut Avenue, Tremont and Bunker Hill streets to Bunker Hill; Mount Pleasant via Shawmut Avenue and Tremont Street to Cornhill; Franklin Park via Warren Street and Shawmut Avenue to Temple Place; Franklin Park via Blue Hill and Shawmut avenues to Temple Place; Franklin Park via Warren Street and Shawmut Avenue to Dover Street; Franklin Park via Blue Hill and Shawmut avenues to Dover Street; Egleston Square via Washington and Hanover streets to Chelsea Ferry; Egleston Square via Washington and Hanover streets to East Boston Ferry; Franklin Park via Washington Street to Franklin Street; Franklin Park via Warren Street and Shawmut Avenue to Cornhill; Franklin Park via Warren Street and Shawmut Avenue to Tremont House; Franklin Park via Warren Street and Columbus Avenue to Cornhill; Franklin Park via Blue Hill and Columbus avenues to Cornhill; Franklin Park via Blue Hill and Columbus avenues to northern depots; Franklin Park via Warren Street and Columbus

Avenue to northern depots; Franklin Park via Warren, Washington and Main streets to Franklin Street (Somerville); Franklin Park via Warren Street and Shawmut Avenue to northern depots; Franklin Park via Washington Street to Dover Street; Grove Hall via Blue Hill Avenue to Franklin Park; Maywood Street via Warren Street and Blue Hill Avenue to Franklin Park; Egleston Square via School Street to Franklin Park; Grove Hall via School and Washington streets to Franklin Street; Bartlett Street via Washington Street to Franklin Street; Maywood Street via Washington Street to Franklin Street; Bartlett Street via Washington Street to Forest Hills; Norfolk House via Washington Street to Rowe's Wharf; Norfolk House via Washington Street to Forest Hills; Shawmut Avenue stable via Washington Street to Rowe's Wharf; Dudley Street station via Blue Hill Avenue to Franklin Park; Dudley Street station via Warren Street to Franklin Park; Norfolk House via Washington Street to Franklin Street; Grove Hall via Warren Street and Shawmut Avenue to Tremont House; Maywood Street via Warren Street and Shawmut Avenue to Scollay Square.

Second Division.

Roxbury crossing via Tremont and Hanover streets to East Boston Ferry; Roxbury crossing via Tremont Street to Scollay Square; Roxbury crossing via Tremont Street to Cornhill; Roxbury crossing via Tremont and Summer streets to Rowe's Wharf; Jamaica Plain via Tremont Street to Tremont House; Brookline (Cypress Street) via Huntington Avenue to Tremont House; Brookline (Park Street) via Huntington Avenue to Tremont House; Brookline via Tremont Street to Tremont House; Brookline via Tremont Street to northern depots; Longwood Avenue via Huntington Avenue to Tremont House; Back Bay via Dartmouth and Boylston streets to Scollay Square; Back Bay via Clarendon and Boylston streets to Scollay Square; Lenox Street via Dartmouth and Boylston streets to northern depots; Lenox Street via Tremont, Washington and Hanover streets to East Boston Ferry; Northampton Street via Washington Street to West End; Northampton Street via Tremont Street to West End; Northampton Street via Columbus Avenue and Eliot Street to Post Office Square; Northampton Street via Columbus Avenue and Tremont Street to Cornhill; Northampton Street via Columbus Avenue, Eliot and Washington streets to Temple Place; Northampton corner Washington streets via Northampton Street and Huntington Avenue to northern depots; Lenox Street via Dartmouth and Boylston streets to Cornhill; Lenox Street via Tremont and Summer streets to Atlantic Avenue; Coolidge's Corner via Beacon and Boylston streets to Tremont House; Allston via Longwood and Huntington avenues to Tremont House.

Third Division.

Meeting House Hill via Dudley and Washington streets to Franklin Street; Upham's Corner via Dudley and Washington streets to Franklin Street; Upham's Corner via Dudley and Hampden streets to Water Street; Park

Street via Dorchester Avenue to Franklin Street; Park Street via Dudley, Hampden and Washington streets to Bedford Street; Milton via Dudley, Hampden and Washington streets to Bedford Street; Milton via Dorchester Avenue to Franklin Street; Meeting House Hill via Hampden and Tremont streets to Dover Street; Meeting House Hill via Hampden and Tremont streets to Back Bay churches; Upham's Corner via Dudley, Washington and Tremont streets to Back Bay churches; Ashmont via Dudley, Hampden and Tremont streets to Back Bay churches.

Fourth Division.

Chelsea via Broadway and Meridian streets to East Boston Ferry; Prescott Street via Lexington and Meridian streets to East Boston Ferry; Jeffries Point via Webster and Sumner streets to East Boston Ferry; Winthrop Junction via Saratoga and Meridian streets to East Boston Ferry.

South Boston Division.

North Point via Broadway, Dover, Charles and Main streets to Harvard Square; North Point via Broadway, Dover, Charles and Main streets to Park Square; North Point via Broadway, Dover and Charles streets to Post Office Square; North Point via Broadway to Brattle Street; North Point via Broadway to Scollay Square; South Point via Eighth Street to northern depots; South Point via Eighth Street to Brattle Street; South Point via Eighth Street to Scollay Square; South Point via Eighth, Washington and Cambridge streets to East Cambridge; K Street via Broadway to Scollay Square; K Street via Broadway to Brattle Street; K Street via Broadway to Milk Street; K Street via Broadway to Post Office Square; Dorchester Street via Broadway to northern depots; southern depots via Atlantic Avenue to northern depots; Broadway and Dorchester Street via Dorchester Street to Dorchester Avenue.

Charlestown Division.

Medford via High Street to West Medford; Medford via Somerville and Charlestown to Scollay Square; Medford via Malden, West Everett and Charlestown to Scollay Square; Medford via Malden, Everett Square and Charlestown to Scollay Square; Malden via Everett (Ferry Street) and Charlestown to Scollay Square; Malden via Everett (Main Street) and Charlestown to Scollay Square; Malden via Medford, Somerville and Charlestown to Scollay Square; Malden via Everett Square and Charlestown to Adams Square; Ferry Street station (Everett) via Everett Square and Charlestown to Scollay Square; Bunker Hill via Post Office Square and Federal Street to southern depots; Bunker Hill via Washington Street to Temple Place; Franklin Street (Somerville) via Main and Washington streets to Adams Square; Franklin Street (Somerville) via Scollay Square and Columbus Avenue to Northampton Street; Highland Avenue (Somerville) via Scollay Square and Columbus Avenue to Northampton Street; Franklin Street (Somerville) via Medford Street to Central Street (Somerville); Union Square (Somerville) via Charlestown to Temple Place; Union

Square (Somerville) via Highland Avenue to Davis Square (Somerville); Winter Hill via Main and Washington streets to southern depots; Winter Hill via Main and Washington streets to Boylston Street; Winter Hill via Main and Washington streets to Adams Square.

Cambridge Division.

Oak Square via Washington and Cambridge streets and Central Square to Bowdoin Square; Washington Street (Brighton) via Western Avenue and Main Street to Bowdoin Square; Cottage Farm via Brookline and Main streets to Bowdoin Square; Mount Auburn via Garden and Main streets to Bowdoin Square; Mount Auburn via Brattle and Main streets to Bowdoin Square; Newton via Brattle and Main streets to Bowdoin Square; Arlington via North Avenue and Main Street to Bowdoin Square; North Avenue station via North Avenue and Main Street to Bowdoin Square; Baldwin Street via Cambridge and Portland streets to Scollay Square; River Street via River and Main streets to Bowdoin Square; Pearl Street via Pearl and Main streets to Bowdoin Square; Porter's Station via Inman Square and Hampshire Street to Bowdoin Square; Porter's Station via Inman Square and Hampshire Street to Park Square; Eighth Street via Cambridge and Charles streets to Park Square; Central Square via Prospect and Cambridge streets to Scollay Square; Clarendon Hill via Union Square, Craigie Bridge and Portland Street to Bowdoin Square; Clarendon Hill via Union Square, Craigie Bridge and Charles Street to Park Square; Dover Street via Union Square, Craigie Bridge and Portland Street to Bowdoin Square; Dover Street via Third, Main and Charles streets to Park Square; Spring Hill via Webster Avenue and Inman Square to Bowdoin Square; Spring Hill via Webster Avenue and Inman Square to Park Square; Union Square via Webster Avenue and Cambridge Street to Scollay Square; Harvard Square via Main and Charles streets to Park Square; Harvard Square via Main and Cambridge streets to Bowdoin Square; Harvard Square via Broadway to Bowdoin Square; Harvard Square via Broadway to Park Square; Harvard Square via Kirkland Street and Inman Square to Park Square; Barry's Corner via North Harvard and Kirkland streets to Beacon Street; Harvard Square via Cambridge Street to Scollay Square; Allston via Cambridge and River streets to Bowdoin Square; Spring Hill via Craigie Bridge and Charles Street to Park Square.

Length of railway belonging to other companies, measured as single track, not including sidings, etc., operated by this company, *or over which this company runs its cars*, with the description of same:	16.26 miles.
Malden & Melrose, 6.69 miles.	
Somerville, 8.90 "	
Boston & Chelsea, .67 "	
Total length of railway measured as single track, not including sidings, etc., operated by this company,	227.88 "

Miles Run, etc., from Nov. 12, 1887.

Total number of miles run,	13,495,511
Total number of passengers carried in the cars,	84,843,722
Total number of round trips,	1,860,770
Number of persons regularly employed by company,	4,000
Rates of fare: single, 5 cents; transfer checks, 8 and 9 cents.	

List of Accidents.

	From Causes beyond their own Control.		From their own Misconduct or Carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	77	1	21	1	98
Employees, ...	-	5	-	2	-	7
Others, ...	3	46	-	7	3	53

Statement of Each Accident.

Nov. 16, 1887. — Man fell getting off car.
November 20. — Man fell getting off car.
November 24. — Man struck by brake handle.
November 27. — Man knocked down by car.
November 27. — Collision of car with carriage, throwing occupants out.
November 29. — Child knocked down and run over by car.
November 30. — Man's fingers jammed by conductor shutting car door.
December 1. — Man jammed between car and team.
December 6. — Man thrown from team by collision with car.
December 6. — Man getting off one car knocked down by another car.
December 10. — Woman thrown from sleigh upset by snow.
December 10. — Man fell getting off car.
December 13. — Man thrown from team by collision.
December 17. — Woman knocked down by horses and run over by car, and died from injuries.
December 19. — Woman fell getting off car.
December 28. — Man fell getting off car.
Jan. 6, 1888. — Driver kicked by a horse at Northampton Street stable.
January 7. — Man fell getting off car.
January 12. — Man thrown from car going round curve.
January 13. — Man fell getting off car.
January 14. — Man fell getting on car.
January 16. — Boy five years old run over by car.
January 18. — Man run over by snow team
January 19. — A conductor kicked by a horse in street.
January 21. — Woman hurt on car by collision with pung.
January 25. — Man and driver thrown by collision of two cars.
January 27. — Man jammed between car and team.
February 3. — Two women, passengers, thrown by collision of car with team.
February 3. — Woman thrown down getting off car.
February 5. — Man thrown from car by breaking of car handle.
February 6. — Woman fell getting off car.
February 11. — Man thrown from team by collision.
February 16. — Man fell off car and was run over.
February 17. — Employee run over by car.
February 18. — Man fell off car in motion.

February 18. — Man getting off one car run over by another.
February 18. — Woman fell from car by dress catching on car.
February 20. — Conductor jammed between two cars.
February 24. — Man pushed by conductor from car in motion.
February 27. — Man fell getting off car.
February 28. — Man struck by a car as he was getting on another car.
February 29. — Man fell getting off car.
March 1. — Woman fell getting on car.
March 2. — Woman thrown from seat by the motion of car.
March 3. — Man fell getting on car.
March 5. — Man getting on car struck by passing car.
March 5. — Woman fell off car.
March 5. — Man thrown from wagon by collision.
March 7. — Man fell from car and was run over.
March 9. — Man fell off car in motion.
March 9. — Woman had her hand jammed in door of car.
March 10. — Woman struck by team in collision with car.
March 10. — Woman fell getting off car.
March 10. — Man knocked down by horses in street.
March 11. — Woman fell getting off car.
March 14. — Man thrown from wagon by collision with snow-plough.
March 15. — Woman injured inside a car off the track.
March 17. — Man thrown off wagon by collision with car.
March 20. — Woman knocked down by horses in street.
March 22. — Man fell getting off car.
April 4. — Man fell off car in motion.
April 7. — Man fell off car in motion.
April 10. — Woman, getting off car, struck by another car.
April 16. — Man was knocked down while attempting to get upon a coach, and died from the injuries.
April 23. — Man fell off car in motion off track.
April 23. — Woman caught dress on brake-dog and thrown down.
April 23. — Car struck man on bicycle and threw him off.
April 25. — Woman thrown inside car by collision with another car.
May 2. — Two women in buggy thrown out by horse taking fright at an electric car.
May 10. — Woman fell getting on car.
May 11. — Woman struck by brake-handle of car.
May 16. — Man fell getting on car.
May 18. — Man cut by a scythe on front platform.
May 19. — Man, getting on car, fell under another car, and died from injuries.
May 21. — Two women hurt by collision of car and team.
May 21. — Man fell getting off car.
May 24. — Man thrown from wagon by collision with car.
May 24. — Man thrown off car off track.
May 29. — Woman knocked down by car.
May 29. — Woman run over by car.
May 31. — Man knocked off running-board of car by shaft of team.
June 2. — Tow-horse stepped on a woman's foot.
June 3. — Man fell off car in motion.
June 3. — Man thrown off car off the track.

June 3. — Woman caught dress on car and fell.
June 5. — Child run over by car in street, and died from injuries.
June 5. — Man knocked off car by collision with another car.
June 8. — Employee jumped off car and was run over.
June 9. — Man thrown off team by collision with car.
June 9. — Boy knocked down and run over by car.
June 9. — Man jammed between two cars.
June 14. — Man thrown off car on curve.
June 15. — Woman fell getting off car.
June 16. — Man thrown from team by collision with car.
June 18. — Man knocked down by horses on car.
June 19. — Man knocked down by car.
June 19. — Woman knocked down by horses and car.
June 20. — Woman fell getting off car.
June 20. — Man fell getting on car.
June 21. — Man injured by collision of cars.
June 22. — Boy struck by car.
June 22. — Man in trench run upon by horses.
June 23 — Man struck by team while getting on car.
June 23. — Woman fell getting off car.
June 23. — Woman fell getting off car.
June 24. — Man, getting on car, knocked down by another car.
June 27. — Man fell getting off car.
June 27. — Man thrown from wagon by collision with car.
June 28. — Woman fell getting off car.
June 28. — Woman knocked down by car horses.
June 30. — Man, getting on car, struck by another car.
July 2. — Woman fell getting off car.
July 2. — Man jumped off car and fell.
July 3. — Man had arm run over by car.
July 3. — Man thrown in wagon by collision with car.
July 4. — Man fell getting off car.
July 4. — Man fell getting on car.
July 5. — Man knocked down by horses in street.
July 5. — Woman fell off step of coach.
July 5. — Man thrown by collision of car with team.
July 6. — Man injured by collision of car with gate beam.
July 6. — Woman fell by catching dress on car.
July 6. — Woman fell getting off car.
July 11. — Woman fell getting off car.
July 15. — Man knocked down by horses.
July 24. — Man thrown off team by collision with car.
July 28. — Woman knocked down by car.
July 30. — Employee jammed between two cars.
August 3. — Two men thrown from team by defect in track.
August 5. — Man jumped off car and fell.
August 6. — Employee kicked by a horse.
August 6. — Man knocked down by a car.
August 7. — Woman fell getting off car.
August 8. — Man thrown from car on curve.
August 9. — Woman hurt by car jumping track.

August 10. — Man thrown from team by collision with car.
August 15. — Man thrown off team by collision with car.
August 16. — Man knocked into a hole in the street by car.
August 17. — Woman struck by brake of car.
August 18. — Woman had thumb hurt by collision of cars.
August 18. — Woman kicked by tow-horse.
August 22. — Woman and two children thrown off car on curve.
August 23. — Man knocked down by runaway horse, and died from injuries.
August 25. — Woman struck by brake-handle.
August 25. — Man injured by wagon struck by car off track.
August 26. — Boy, getting off car, fell under another car.
August 27. — Woman struck by a brick thrown by a driver of a team.
August 31. — Woman fell getting off car.
September 3. — Woman stepped off car and fell in a hole.
September 3. — Man fell getting off car.
September 5 — Man struck by car.
September 5. — Woman fell getting off car.
September 7. — Collision between car and hook and ladder truck, by which ladderman lost a leg.
September 10. — Woman fell getting off car.
September 10. — Woman thrown from seat by collision of car with team.
September 13. — Man knocked off running-board by passing car.
September 14. — Man run against by car.
September 15. — Man struck by car.
September 17. — Woman fell getting off car.
September 17. — Man had hand cut by collision of cars.
September 20. — Man fell getting on car.
September 25. — Girl knocked down by horses in street.

PROPER ADDRESS OF THE COMPANY.

WEST END STREET RAILWAY COMPANY,

81 MILK STREET, BOSTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

Henry M. Whitney, *President*, Brookline, Mass. D. F. Longstreet, *General Manager*, Boston, Mass. Joseph H. Goodspeed, *Treasurer*, Boston, Mass. Prentiss Cummings, *Clerk of Corporation*, Brookline, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

William B. Bacon, Boston, Mass. Jarvis D. Braman, Boston, Mass. G. T. W. Braman, Cohasset, Mass. Nelson Bartlett, Boston, Mass. Isaac T. Burr, Newton, Mass. Joseph S. Fay, Jr., Falmouth, Mass. Jonas H. French, Gloucester, Mass. Henry D. Hyde, Boston, Mass. Eben D. Jordan, Boston,

Mass. Samuel Little, Boston, Mass. D. F. Longstreet, Boston, Mass. Asa P. Potter, Cohasset, Mass. Edmund Reardon, Cambridge, Mass. Dexter N. Richards, Brookline, Mass. Henry M. Whitney, Brookline, Mass.

HENRY M. WHITNEY,
JONAS H. FRENCH,
I. T. BURR,
J. S. FAY, Jr.,
EDMUND REARDON,
SAMUEL LITTLE,
G. T. W. BRAMAN,
HENRY D. HYDE,
NELSON BARTLETT,
DEXTER N. RICHARDS,
Directors.
J. H. GOODSPEED,
Treasurer.
D. F. LONGSTREET,
General Manager.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 13, 1888. Then personally appeared said Henry M. Whitney, Jonas H. French, I. T. Burr, J. D. Fay, Jr., Edmund Reardon, Samuel Little, G. T. W. Braman, Henry D. Hyde, Nelson Bartlett, Dexter N. Richards, D. F. Longstreet and J. H. Goodspeed, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief. Before me,

PRENTISS CUMMINGS,
Justice of the Peace.

REPORT

OF THE

WINNISIMMET STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPT. 30, 1888.

[This road is leased to and operated by the Lynn & Boston Railroad Company.]

CAPITAL STOCK AND DEBT.

CAPITAL STOCK.

Capital stock authorized by charter,	$75,000 00	
Capital stock authorized by votes of company,	50,000 00	
Capital stock paid (par value of shares, $50),		$50,000 00
Number of stockholders,	40	

DEBT.

Unfunded debt, as follows:		$40 50
Unpaid dividends,	$40 50	
TOTAL GROSS DEBT,		$40 50
Amount of cash assets, viz.:		163 85
Cash,	$163 85	

PERMANENT INVESTMENTS.

RAILWAY.

TOTAL COST OF CONSTRUCTION,	$50,000 00
TOTAL AMOUNT OF PERMANENT INVESTMENTS,	$50,000 00
Cash assets,	163 85
TOTAL PROPERTY AND ASSETS OF COMPANY,	$50,163 85

REVENUE FOR THE YEAR.

Received from other railways as tolls or rent:		$3,000 00
Lynn & Boston Railroad Company,	$3,000 00	
TOTAL INCOME FROM ALL SOURCES,		$3,000 00

NET INCOME, DIVIDENDS, ETC.

TOTAL NET INCOME ABOVE OPERATING EXPENSES,	$3,000 00
Dividends declared (6 per cent.) for the year,	3,000 00
Surplus at commencement of year,	123 35
TOTAL SURPLUS SEPT. 30, 1888,	$123 35

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$50,000 00
Cash and cash assets,	163 85
TOTAL ASSETS,	$50,163 85

LIABILITIES.

Capital stock,	$50,000 00
Unfunded debt,	40 50
Surplus,	123 35
TOTAL LIABILITIES,	$50,163 85

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To dividends,	$3,000 00
Balance carried forward Sept. 30, 1888,	123 35
	$3,123 35

CR.

By balance Sept. 30, 1887,	$123 35
total income,	3,000 00
	$3,123 35

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	1.8836 miles.
Aggregate length of switches, sidings, etc.,	.1317 "
Total length of track, measured as single track,	2.0153 "
Total length of track paved: All paved.	
Weight of rail per yard, and description of rail: 48 pounds per yard street rail.	

PROPER ADDRESS OF THE COMPANY.

WINNISIMMET RAILROAD COMPANY,

13 TREMONT ROW (Room 2), BOSTON, MASS.

NAME AND RESIDENCE OF OFFICERS.

William R. Pearmain, *President*, Chelsea, Mass. E. Francis Oliver, *Treasurer and Clerk of Corporation*, Boston, Mass.

NAME AND RESIDENCE OF DIRECTORS LAST ELECTED.

William R. Pearmain, Chelsea, Mass. Edward Russell, Brookline, Mass.
Edward R. Cogswell, Cambridge, Mass. Thomas P. Proctor, Boston, Mass.
E. Francis Oliver, Boston, Mass.

WM. R. PEARMAIN,
THOS. P. PROCTOR,
E. FRANCIS OLIVER,
Directors.
E. FRANCIS OLIVER,
Treasurer.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. Nov. 7, 1888. Then personally appeared William R. Pearmain, Thomas P. Proctor and E. Francis Oliver, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

BENTLEY W. WARREN,
Justice of the Peace.

REPORT

OF THE

WORCESTER CONSOLIDATED STREET RAILWAY COMPANY,

FOR THE YEAR ENDING SEPTEMBER 30, 1888.

CAPITAL STOCK AND DEBT.		
CAPITAL STOCK.		
Capital stock authorized by charter,	$350,000 00	
Capital stock authorized by votes of company,	350,000 00	
Capital stock paid (par value of shares, $100),		$350,000 00
Number of stockholders,	41	
DEBT.		
Funded debt, as follows:		$150,000 00
Bonds due, 5 per cent. rate of interest,	$150,000 00	
Unfunded debt, as follows:		63,743 91
Notes payable,	$53,000 00	
Accounts,	10,743 91	
TOTAL GROSS DEBT,		$213,743 91
Amount of cash assets, viz.:		17,241 91
Cash,	$12,444 07	
Supplies,	3,706 65	
Debit balances,	1,091 19	
NET DEBT,		$196,502 00
PERMANENT INVESTMENTS.		
RAILWAY.		
Grading and paving and track, including timber, rails, etc., and laying,	$295,463 51	
Engineering, agencies, salaries, and other expenses during construction,	4,345 91	
TOTAL COST OF CONSTRUCTION,		$299,809 42
EQUIPMENT.		
Horses,		$54.771 00
Cars,		56,654 44
Other articles of equipment,		10,912 51
TOTAL COST OF EQUIPMENT,		$122,337 95
LAND AND BUILDINGS.		
Land owned by company needed in operating road,		$79,134 86
Buildings owned by company needed in operating road,		55,644 74
TOTAL COST OF LAND AND BUILDINGS,		$134,779 60
TOTAL AMOUNT OF PERMANENT INVESTMENTS,		$556,926 97
Cash assets,		17,241 91
TOTAL PROPERTY AND ASSETS OF COMPANY,		$574,168 88

PROPERTY ACCOUNTS: CHARGES AND CREDITS DURING THE YEAR.		
Extension of tracks (balance due on bills last year),		$2,436 00
Extension of tracks (legal services and engineering),		3,109 50
New horses (number, 39),		6,435 00
New cars (number, 8),		5,514 00
Other equipment,		974 67
Land and buildings,		11,045 48
TOTAL ADDITION TO PROPERTY,		$29,514 65
REVENUE FOR THE YEAR.		
Received from passengers on railways operated by this company,		$180,292 39
Received from sales of manure,		1,181 09
TOTAL EARNINGS,		$181,473 48
Income from other sources:		621 40
Rent of blacksmith shop,	$50 00	
Advertising in cars,	571 40	
TOTAL INCOME FROM ALL SOURCES,		$182,094 88
EXPENSES OF OPERATING THE RAILWAY FOR THE YEAR.		
Repairs of road-bed and track,		$4,280 92
Repairs of cars and other vehicles, harness and horse-shoeing,		15,453 10
Repairs of buildings,		3,536 37
Renewal of horses,		3,408 83
Wages and salaries of president, treasurer, superintendent and their clerks,		7,664 01
Wages and salaries of all other persons employed in operating the road,		62,214 33
Provender,		32,236 51
Taxes, State and local,		4,743 27
Insurance,		1,414 24
Damages for injuries to persons and property,		244 15
Office expenses, and all other expenses not included above,		15,283 59
TOTAL EXPENSES OF OPERATING,		$150,479 32
NET INCOME, DIVIDENDS, ETC.		
TOTAL NET INCOME ABOVE OPERATING EXPENSES,		$31,615 56
Interest accrued during the year,		11,622 20
Dividends declared (6 per cent.) for the year,		21,000 00
Balance for the year, or deficit,		1,006 64
Surplus at commencement of year,		11,431 61
TOTAL SURPLUS SEPT. 30, 1888,		$10,424 97
INVENTORY OF EQUIPMENT SEPT. 30, 1888.		
Box cars,		32
Open cars,		34
Horses,		336
Harnesses (pairs of),		52½
Sleighs,		5
Other articles of equipment:		
One truck wagon, 1 tip-cart, 1 hand-cart, 4 snow-ploughs, 5 snow-sleds, 3 sets Travers runners, 2 buggies, 1 phaeton, 1 sleigh, 2 horse-powers, 4 hay cutters, 1 elevator.		
Largest number of horses owned at any time during the year,		339
Smallest number of horses owned at any time during the year,		297
Average number of horses owned during the year,		318

General Balance Sheet Sept. 30, 1888.

ASSETS.

Construction,	$299,809 42
Equipment,	122,337 95
Land and buildings,	134,779 60
Cash and cash assets,	17,241 91
TOTAL ASSETS,	$574,168 88

LIABILITIES.

Capital stock,	$350,000 00
Funded debt,	150,000 00
Unfunded debt,	63,743 91
Surplus,	10,424 97
TOTAL LIABILITIES,	$574,168 88

Copy of Profit and Loss Account for the Year ending Sept. 30, 1888.

DR.

To expenses,	$150,479 32
interest,	11,622 20
dividends,	21,000 00
Balance carried forward Sept. 30, 1888,	10,424 97
	$193,526 49

CR.

By balance Sept. 30, 1887,	$11,431 61
total income,	182,094 88
	$193,526 49

DESCRIPTION OF RAILWAY.

Length of railway owned by company, measured as a single track, exclusive of sidings,	14.611 miles.
Aggregate length of switches, sidings, etc.,	1.196 "
Total length of track, measured as single track,	15.807 "
Total length of track paved,	15.807 "

Weight of rail per yard, and description of rail: Most all steel, 36 and 40 pounds.

Description of the several lines or routes operated by the company:

Park Avenue to Union Depot; Polytechnic Institute to Rural Cemetery; Lincoln Square to Stearns Square; Lincoln Square to Quinsigamond; Adams Square to New Worcester; Lincoln Square to Union Depot; Lincoln Square to New Worcester; Perkins Street to New Worcester; New Worcester to Union Depot.

Total length of railway, measured as single track, not including sidings, etc., operated by this company,	14.611 miles.

MILES RUN, ETC.

Total number of miles run during the year,	584,957
Total number of passengers carried in the cars,	3,794,169
Total number of round trips for the year,	113,655
Number of persons regularly employed by company,	154
Rates of fare,	5 and 3 cents.

List of Accidents.

	From causes beyond their own control.		From their own misconduct or carelessness.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers, ...	-	-	-	-	-	-
Employees, ...	-	-	-	-	-	-
Others, ...	-	-	-	2	-	2

Statement of Each Accident.

Man driving in front of car; car-pole caught in wheel of carriage and threw him out of carriage, breaking rib and arm.

Proper Address of the Company.

WORCESTER CONSOLIDATED STREET RAILWAY COMPANY,
Worcester, Mass.

Name and Residence of Officers.

C. B. Pratt, *President*, Worcester, Mass. H. S. Seeley, *Superintendent, Treasurer and Clerk of Corporation*, Worcester, Mass.

Name and Residence of Directors last Elected.

Chas. B. Pratt, Worcester, Mass. Geo. H. Seeley, New York, N. Y. N. Seeley, New York, N. Y. H. S. Seeley, Worcester, Mass. Hiram Fobes, Worcester, Mass. N. S. Liscomb, Worcester, Mass. T. M. Rogers, Worcester, Mass.

CHAS. B. PRATT,
GEO. H. SEELEY,
HIRAM FOBES,
N. S. LISCOMB,
H. S. SEELEY,
Directors.

H. S. SEELEY,
Treasurer.

H. S. SEELEY,
Superintendent.

Commonwealth of Massachusetts.

Worcester, ss. November, 1888. Then personally appeared Chas. B. Pratt, Geo. H. Seeley, Hiram Fobes, H. S. Seeley and N. S. Liscomb, and severally made oath to the truth of the foregoing statement by them subscribed, according to their best knowledge and belief.

R. JAS. TATMAN,
Justice of the Peace.

LEASES AND CONTRACTS.

LEASES AND CONTRACTS.

LEASE

BY THE BOSTON & PROVIDENCE RAILROAD CORPORATION OF ITS RAILROAD AND PROPERTY TO THE OLD COLONY RAILROAD COMPANY FOR NINETY-NINE YEARS, FROM APRIL 1, 1888.

This Indenture, made this seventh day of April, in the year of our Lord one thousand eight hundred and eighty-eight, by and between the Boston & Providence Railroad Corporation, party of the first part, hereinafter called the lessor, and the Old Colony Railroad Company, party of the second part, hereinafter called the lessee, both parties being corporations created by the laws of Massachusetts,

Witnesseth, That the said parties, each for itself, its successors and assigns, and each in consideration of the grants, covenants and agreements herein made by the other, have granted, covenanted and agreed, and do hereby grant, covenant and agree, each to and with the other, and its successors and assigns, as follows, to wit: —

First. The lessor doth grant, demise and lease unto the lessee, its successors and assigns, all its railroad and property of every description, including therein its railroad, lands and wharves, branches, tracks, side tracks, road-beds, superstructure, station houses, depot grounds, depots, viaducts, bridges, piers, shops, buildings and fixtures, whether within its location or not; and also its engines, cars, rolling stock, machinery, tools, furniture, appliances, telegraph apparatus, equipment; and all rights, franchises, easements, privileges and appurtenances thereunto belonging, together with the right to demand and receive all tolls, rents, revenue, income and profits of the demised premises; including also therein all the right, title and interest of the lessor in and to any and all railroads operated by it, under lease or otherwise, and in or to any stock of other corporations owned by it, or held for it, all dividends thereon, and the right of voting on the same, and in and to all contracts and obligations of or with other railroads, corporations or individuals, and all income, advantages and benefits to be derived therefrom; hereby assigning and transferring unto the lessee, under the terms and provisions of this lease, and for the purposes thereof, all its railroad, railroad property, franchises and assets of every description, however described and wherever situated, excepting only its papers and books of account, and material and supplies, bills and accounts receivable, money and cash on hand, which papers and books of accounts shall be at all times open to the reasonable inspection of the lessee, so far as required for its protection under this lease.

To have and to hold all and singular the demised premises to the lessee, its successors and assigns, for and during the term of ninety-nine years from and after the first day of April, in the year of our Lord one thousand eight hundred and eighty-eight; the lessee paying unto the lessor the rent hereby reserved, and keeping and performing the terms, conditions and agreements hereinafter contained to be by it kept and performed.

Second. The lessor will at all times, upon reasonable request, execute and deliver any and all instruments, and take any other action, at the request and expense of the lessee, that may be requisite or necessary to confirm, carry out, effectuate and establish the terms of this lease and agreement to its full meaning and intent, and to vest in and

secure to the lessee the full use and enjoyment of the railroads and property demised or intended to be demised hereby. The lessor will, during the continuance of this lease and agreement, maintain its existence and organization as a corporation, and to that end will comply with all the requisites and forms of law; and it will, at the request and expense of the lessee, do and perform all such acts, lawful and consistent with its rights hereunder, as shall be proper and necessary for the due protection, preservation and full enjoyment by the lessee of all the property, rights, franchises and interests hereby demised or granted to it, and to carry out the true intent and meaning of this instrument; and, in default thereof, it hereby authorizes the same to be done by the lessee, or by its agents, successors and assigns, in the name and as the act of the lessor; and the lessee, its successors and assigns, may, at its or their own expense and charge, and for its or their own use and benefit, use the name, franchise and corporate power of the lessor, in commencing, prosecuting or defending any suit or proceeding, or taking any action which may be necessary or proper to enable it or them to defend, assert, exercise or maintain any right or privilege secured to it or them by this instrument, or arising from the title or possession thereunder, or to enforce payment of damages for injuries thereto, and to give due receipts, acquittances and discharges on account thereof and in relation thereto.

Third. The lessee shall not assign this lease, nor under-let the whole or any part of the demised premises, except such portions thereof as may not be required by it for railroad uses, without the consent of the directors of the lessor. But, if the lessee shall unite with, or sell or lease its railroad to any other railroad corporation, it may assign this lease to the corporation formed by such union, or to the corporation to which it thus sells or leases, such corporation becoming, and the lessee remaining, liable upon the covenants thereof.

Fourth. The lessee shall observe and perform all the provisions of contracts of the lessor with the owners of railroads now leased or operated by it, and shall pay the rent and perform the covenants, in the lease of the Attleborough Branch Railroad to the lessor, dated the thirty-first day of December, A. D. 1870; and, at the termination of said lease, the same shall, if requested by the lessee, and if it can be done, be renewed by the lessor, from time to time, upon the most favorable terms practicable, for a term or terms not exceeding the then unexpired term of this lease; and, being so renewed, shall be subject to all the provisions of this lease and agreement, as effectually as if now existing and herein included; and, upon the expiration, or earlier termination of this lease, shall be reassigned to, and inure to the benefit of, the lessor.

Fifth. The lessee shall pay to the lessor, as rent for the demised premises, the sum of one hundred thousand dollars for each quarter in each year during the term of this lease, to wit: On the first day of July, the first day of October, the first day of January and the first day of April, in each and every year (the first payment to be made on the first day of July, A. D. 1888), and at the same rate for any portion of a quarter, at the office of the treasurer of the lessee, in the city of Boston; and shall also pay to the lessor, during the first three (3) years of said term, the sum of ten thousand dollars ($10,000) per annum, in equal quarterly payments, on the same days as said rent is payable; and each and every year thereafter, during said term, the sum of three thousand dollars ($3,000), in like manner, as and for the expense of preserving the organization of the lessor, as herein agreed to be preserved and kept up. And the lessee will, on the first day of May, 1888, pay to the lessor the sum of thirteen hundred thousand dollars ($1,300,000), and also a sum equal to five dollars ($5) per share upon its capital stock, as and for a dividend, out of the net earnings of the lessor up to the date of this lease. The lessee shall also pay, as the same becomes due, the interest on the indebtedness of the lessor (a schedule whereof is hereto annexed), and upon such future indebtedness as shall be created for the purpose of paying such indebtedness and other existing obligations and liabilities of the lessor, in the manner herein provided; and to that end shall pay to the lessor such sums of money, at such times, as shall enable it punctually to meet such interest as the same becomes due. And the lessee shall also pay all taxes and assessments, whether in the nature of taxes, now in being or not, of every description, national, state and municipal, or otherwise, upon the property, business,

franchises and capital stock of the lessor as the same shall be imposed or assessed, and shall at all times keep the lessor indemnified against the same during the term of this lease.

Sixth. The lessee shall at its own expense maintain and keep the railroad and property herein demised, and the railroad and property of the Boston & Providence Railroad Corporation in Rhode Island, hereinafter called the "Rhode Island Company," in as good order and condition as the same now are, and use and operate them in accordance with the charter of the lessor, and the laws of the Commonwealth of Massachusetts, and of the State of Rhode Island, and of the United States, so far as the same are respectively applicable; shall make all returns required of it by law, and furnish the lessor with such statements and accounts as shall enable it to make all returns by law required of it; and shall furnish all cars, engines, rolling stock and equipment required, in addition to the like property hereby demised for the due and proper use and operation thereof, in such manner as at all times to meet the demands of the public service, and to furnish equal facilities for travel and business with those now afforded by the lessor; and it shall apply the proceeds of rolling stock and other personal property herein demised, which it may deem advisable to sell, and which (with the exception of stocks of other corporations) it is hereby authorized to sell at its discretion, so as to substitute therefor other like property for use in the maintenance and operation of said railroad and property of equal value.

Seventh. The lessee shall furnish the officers of the lessor with proper accommodations at the station of the demised railroad in Boston, and with free transportation for themselves and an inspector over the railroad hereby demised (it being understood that such officers shall not exceed a president, treasurer, clerk and six directors); and shall permit some suitable person, appointed by the directors of the lessor as an inspector of the demised property, to examine the same once in each year, so far as may be necessary to ascertain the condition thereof, and shall pay the reasonable expense of such annual inspection, in addition to the rent herein reserved.

Eighth. The lessee will, during the continuance of this lease, protect and save harmless the lessor and the Rhode Island Company against all actions or claims for injury to persons or property during the term thereof, by reason of any want of repair of the demised road and property or appurtenances, or of the road, property and appurtenances of the Rhode Island Company, or any want of care and skill in the operation and management of the same, or by reason of any defects therein; and will not permit the lessor or the Rhode Island Company to be subjected to any payment, penalty or forfeiture for violation of law in any respect in relation to the maintenance and operation of their said roads and property; but will indemnify and save them harmless against all loss, cost, damage or liability caused by it, or arising out of the use and operation of said roads and property, whether by reason of any contract, statute, negligence or misfeasance, or by reason of the neglect of the lessee or lessor to use and operate said railroad and property as required by law during the continuance of this lease. The lessee will make all permanent improvements on said railroads and property at its own expense; will keep the demised premises reasonably insured, and apply the proceeds of any insurance to restoring and replacing the property destroyed, or otherwise to the benefit of the demised property; and, at the expiration or earlier termination of this lease, it will return said demised road and property to the lessor as a railroad between Boston and Providence, with its now existing branches, and suitably equipped and provided with depots, stations, shops and other structures, of at least equal value with those now existing thereon, and in as good order and condition as the same now are, together with all permanent improvements thereon; and with rolling stock, machinery, tools, furniture, appliances, telegraph apparatus and equipment, of equal value with that hereby demised, according to the appraisal thereof.

Ninth. The lessor will, upon the written request of the lessee, from time to time, convey to such person or persons as the lessee may appoint in such request such portions and parcels of the real estate owned by the lessor outside of its location, and not required by the lessee for railroad purposes, as the lessee may designate, and upon such reasonable terms and for such reasonable price as it may direct, at its expense, the pro-

ceeds to be received by the lessee; but upon an express agreement, however, by the lessee, that all proceeds thereof, or a sum equal thereto, shall be, or shall previously have been, from the funds of the lessee, applied to additions other than improvements upon the railroads of the lessor or their branches, or connected with their real estate, which shall thereupon become the property of the lessor, and subject to the provisions of this instrument; and if, at the expiration or earlier termination of this lease, the lessee shall not have expended in such additions a sum equal to the proceeds of the real estate so conveyed, the balance unexpended shall be paid over to the lessor without interest. But the lessor shall not be obliged, unless its directors consent, to convey any of its real estate in Boston east of the present Dartmouth Street bridge, or of the tract of land owned by it near the junction of its main road with the Dedham branch thereof, and between said branch and the New York & New England Railroad, containing about thirty-three (33) acres; upon which tract, unless thus previously conveyed, and unless it shall return the shops of the lessor now existing, the lessee shall, if not otherwise agreed with the directors of the lessor, place the shops which it is to return to the lessor upon the expiration or earlier termination of this lease, under the eighth article hereof.

Tenth. The capital stock of the Boston & Providence Railroad Corporation in Rhode Island (herein called the Rhode Island Company), owned by the lessor, embraced within the terms of this lease, and assigned to the lessee at the time of the delivery hereof, shall be held and used by the lessee during the term of this lease, for the purpose of maintaining the road and property of said Rhode Island Company as a practical extension and portion of the road and property of the lessor, and at the termination of this lease shall be reassigned to the lessor in such manner as to return to it the entire ownership of the present road and property of said Rhode Island Company, and all improvements thereon. But if the Rhode Island Company or the lessee shall, for the purpose of improving terminal facilities at Providence, or other necessary railroad purposes in Rhode Island, exchange land for other land therein of equal value, or sell land and purchase other land of equal value for the same purpose, the land thus obtained by exchange or purchase shall be received by the lessor at the expiration or earlier termination of this lease, in place of such land so exchanged or sold.

Eleventh. The lessor hereby assigns, transfers and delivers to the lessee all its material and supplies, bills and accounts receivable, money and cash on hand to be by the lessee applied (at the value thereof to be fixed by appraisal) to the payment of the dividend herein agreed to be paid upon the capital stock of the lessor on the first day of May, 1888, and to the payment of outstanding liabilities of the lessor. The lessor shall issue bonds for periods not exceeding the longest allowed by law, and at a rate of interest as low as practicable, for such sums as may be necessary to fund all its outstanding liabilities which are not thus paid, including the expense of defending and adjusting all claims and suits against the lessor, arising in the past use and operation of the demised premises, or of any railroad operated by the lessor; which bonds shall, at the request of the lessee, be extended as they mature for periods not exceeding the unexpired term of this lease on the most favorable terms then practicable.

To provide for the payment of the net indebtedness of the lessor as thus ascertained and funded, the lessee shall, within six months after the same is thus approximately ascertained, and not later than Jan. 1, 1890, establish a sinking fund in the hands of three trustees, appointed and maintained by its directors from their own number, and shall make such annual or more frequent payments thereto as may be necessary, with interest at four per cent. per annum, compounded semi-annually, to cause it to meet said indebtedness during the term of this lease. And the lessee hereby agrees that such sinking fund shall be adequate to pay, and shall pay, said indebtedness at its maturity, as thus funded and extended, and that it will make up any deficiency therein. All bonds thus issued shall be certified by the lessor and lessee as issued under the provisions of this lease.

Twelfth. The lessee shall not sell or otherwise dispose of any of the stocks herein demised and transferred to it, except by assignment of this lease in case of its union with, or sale or lease of its railroad to, some other railroad corporation, as provided in

article third hereof, in which case it may assign them to the corporation formed by such union, or to which it thus sells or leases, to be held by such corporation in the same manner and under the same restrictions as the same are herein provided to be held by the lessee. But the lessee, with the consent of the board of directors of the lessor, may, at any time, sell and transfer all or any portion of the stocks of other corporations embraced within the terms of this instrument and hereby demised, except the stock of the Rhode Island Company; and, in case of such sale, unless the lessee shall have otherwise disposed of the proceeds thereof, by the consent of the directors of the lessor, it shall pay over to the lessor, at the expiration or earlier termination of this lease, the price received, without interest, in full, of all obligation upon its part to return such stocks to the lessor under the provisions of this instrument: *provided, however*, that the stocks of the Union Freight Railroad and of the Providence, Warren & Bristol Railroad, if not thus sold, shall be returned to the lessor, in such manner as to give it the same proportionate interest in and control over the present roads and property of such corporations, with all permanent improvements thereon, as the lessor now has thereby.

Thirteenth. If this lease shall be terminated within the demised term of ninety-nine years without fault of the lessee, the lessor shall pay the lessee a proportional part (having regard to the unexpired portion of the lease, and other circumstances) of its indebtedness which may have been funded by the lessor and paid by the lessee under the provisions of this instrument (but not including interest which may have been paid thereon), and of the cost of such permanent improvements as may have been made and paid for by the lessee upon the demised premises; and if the parties are unable to agree with reference thereto, the same shall be submitted to the decision of three arbitrators, one chosen by each party, and the other by the two thus chosen, whose decision shall be final; and if at any time it shall happen that this lease shall be or become invalid, or shall be terminated without the fault of either party, then, and in such case, each party shall be restored, as nearly as may be, to the condition in which it stood before the lease, it being understood that the rent and interest paid by the lessee on the funded debt of the lessor shall be considered equivalent to the value of the occupation, but that the lessor is not to repay any part of the money agreed to be paid to it by the lessee on the first day of May, 1888, under the provisions of article five hereof.

Fourteenth. This lease and agreement are upon the condition that, if the lessee shall neglect and refuse to pay the rental herein reserved, or any part thereof, or to pay the interest upon the indebtedness of the lessor, as herein agreed to be paid, for more than thirty days after the same shall become due and payable; or if the lessee shall continue to neglect or fail to perform any or either of the other covenants, on its part to be performed, for more than six months after written notice from the lessor of such neglect or failure, and that, if continued, it will be regarded as a forfeiture of this lease, — then, and in either of such cases, the lessor may lawfully, at any time after the lapse of said thirty days or six months, as the case may be, and while such neglect or default continues, without further notice or demand, enter into or upon the leased premises, or any part thereof, in the name of the whole, and repossess the same as of its former estate, and expel the lessee, and those claiming under it, without prejudice to any remedies which might otherwise be used for arrears of rent, or preceding breach of covenants; but nothing herein shall be considered to work a forfeiture of this lease when the omission or delay in performing the obligations hereunder — saving only the payment of rent and of interest — results from causes reasonably beyond the control of the lessee, or when from any cause such omission or delay ought not in equity to work a forfeiture; and in case of disagreement as to the duty of the lessee in performing any of its covenants, — except those for the payment of rent and of interest, — the failure to perform the same shall not entitle the lessor to enter for breach of covenant until the lapse of sixty days after the final determination of the question by suit or arbitration.

Fifteenth. That the property herein demised and to be accounted for at the expiration or earlier termination of this lease may be accurately determined, there shall be made, as of the day when this lease takes effect, a full, complete and particular inventory, and description of all estate and property, real and personal, belonging to the lessor, and coming into the possession of the lessee by virtue of this lease; and that the value

of the engines, cars, rolling stock, machinery, tools, furniture, appliances, telegraph apparatus and equipment hereby demised, and to be returned, may be fixed, an appraisal thereof shall be made. Such inventory, description and appraisal shall be made by two competent persons, one selected by each party. In case of their disagreement, they shall refer the matter in difference to some third person, whose decision shall be final. Such inventory, description and appraisal shall be made in duplicate, and an original furnished to each party, and shall be evidence of the nature, value and condition of the property at the time it is made, in all cases in which any question of such nature, condition or value may arise.

Sixteenth. In case of any question or controversy arising between the parties hereto as to the meaning and intent of this instrument, or any part thereof, or as to anything done thereunder, or growing out thereof, the same shall be referred to the arbitration of two referees, one selected by each party, who shall have power, in case of their disagreement, to choose a third; and the award of the referees so selected, or of a majority of them, shall be final and binding upon the parties.

In witness whereof, the Boston & Providence Railroad Corporation, by its president, Henry A. Whitney, and its treasurer, Benjamin B. Torrey, and the Old Colony Railroad Company, by its president, Charles F. Choate, and its treasurer, John M. Washburn, have to this and one other instrument of even date and tenor herewith signed their corporate names and affixed their corporate seals, the day and year first above written.

THE BOSTON & PROVIDENCE RAILROAD CORPORATION,
By Henry A. Whitney, *President.*
Benjamin B. Torrey, *Treasurer.*

OLD COLONY RAILROAD COMPANY,
By Charles F. Choate, *President.*
John M. Washburn, *Treasurer.*

{ Seal of Old Colony Railroad Company. }

{ Seal of Boston & Providence Railroad Corporation. }

Commonwealth of Massachusetts.

Suffolk, ss. Boston, April 11, 1888. Then personally appeared Henry A. Whitney, as president, and Benjamin B. Torrey, as treasurer, of the Boston & Providence Railroad Corporation, and acknowledged the above instrument to be the free act and deed of said corporation.

Before me,
J. H. Benton, Jr.,
Justice of the Peace.

Commonwealth of Massachusetts.

Suffolk, ss. Boston, April 11, 1888. Then personally appeared Charles F. Choate, as president, and John M. Washburn, as treasurer, of the Old Colony Railroad Company, and acknowledged the above instrument to be the free act and deed of said Old Colony Railroad Company.

Before me,
J. H. Benton, Jr.,
Justice of the Peace.

AGREEMENT.

OLD COLONY RAILROAD COMPANY AND CHATHAM RAILROAD COMPANY.

This Contract, made this fifth day of January, A. D. 1888, by and between the Old Colony Railroad Company, party of the first part, and the Chatham Railroad Company, party of the second part, both parties being railroad corporations created by the Commonwealth of Massachusetts, and owning roads therein connecting with each other,

Witnesseth: The party of the first part shall perform all the transportation of persons and freight upon and over the road of the party of the second part, between the Harwich station on the railroad of the party of the first part and the town of Chatham, upon the following terms and conditions: —

First. The party of the first part shall employ and pay such servants and agents as may be necessary to properly perform all such transportation, and shall save the party of the second part harmless from all loss, cost, damage or expense arising from the acts or omissions of such servants and agents while engaged in such transportation.

Second. The party of the first part shall keep and maintain said railroad, its side tracks, station houses and other buildings, appurtenances and fixtures in good repair, reasonable use and wearing thereof and loss by fire excepted; and keep all buildings insured against loss by fire in a sum not exceeding sixty per cent. of their value, for the benefit of the party of the second part; and shall provide sufficient and proper equipment, rolling stock and appliances to properly perform the transportation of persons and freight upon said road.

Third. The party of the first part shall perform the transportation, herein provided for, according to all requirements of law, and protect and save the party of the second part from all loss, cost, damage or expense, by reason of any failure on its part to keep said railroad and property in repair, as required by this contract, or to perform the transportation of persons and property thereon, as herein required.

Fourth. The rates for transportation performed by the party of the first part, as herein provided, shall be thirty-five (.35) cents for each full passenger fare between Harwich and Chatham, and one dollar ($1.00) per ton for each ton of freight, in addition to the regular fares and freights at Harwich; but the party of the first part may sell package, season and excursion tickets at the same reduction from the regular rates as is made at Harwich; and, in case of such sales, the proportion for the road of the party of the second part shall be the same as its proportion of the regular fares; but the mileage tickets of the party of the first part shall not be used on the road of the party of the second part, and the party of the first part shall have a right to reduce the freight tariff on said road as it may deem proper to secure freight. And, in ascertaining the gross receipts of said railroad for the purposes of this contract, car service upon foreign cars shall be first deducted. If from any cause any reduction is made in the above rates without the consent of the party of the first part, it shall have the right to terminate this contract by written notice to the party of the second part.

Fifth. The party of the first part shall make regular connections over the road of the party of the second part from Chatham with the up passenger trains on its road at Harwich, and regular connections with its down passenger trains from Harwich to Chatham; but shall not be bound to run through cars over its own road, on any passenger trains between Harwich and Chatham.

Sixth. The party of the second part shall pay all taxes on its railroad, franchises and property; shall keep up its corporate existence and organization, and pay all expenses thereof, and all expenses of its own management, including all payments to the Railroad Commissioners; and shall save the party of the first part from all loss, cost, damage or expense arising from any failure on its part to do so.

Seventh. The fares and freights for the transportation performed by the party of the first part, as herein provided, shall be collected by and belong to it, as its compensation for the performance of such transportation; but it shall render an account thereof to the

party of the second part, showing the gross amount of such fares and freights received by it, and the deduction made therefrom for foreign car service, as hereinabove provided; and pay over to the party of the second part thirty per cent. of such gross receipts after making such deduction, at the expiration of each and every three months during the continuance of this contract.

Eighth. Regular accounts of the business done under this contract shall be kept by the party of the first part, and be at all reasonable times open to the proper examination of the party of the second part.

Ninth. This contract shall continue for seven years from the twenty-first day of November, A. D. 1887, and thereafter until terminated by either party, by ten days' written notice to the other.

In witness whereof the parties hereto have set their names and corporate seals to this and one other instrument of like tenor and effect, this fifth day of January, A. D. 1888, by their respective presidents, thereto duly authorized.

[L. S.] OLD COLONY RAILROAD COMPANY,
By Charles F. Choate, *President.*

CHATHAM RAILROAD COMPANY,
By Marcellus Eldridge, *President.*

LEASE OF

NANTASKET BEACH RAILROAD TO OLD COLONY RAILROAD COMPANY.

This Agreement, made the twenty-first day of March, A. D. one thousand eight hundred and eighty-eight (1888), by and between Arthur W. Moors of Boston, trustee, as hereinafter stated, party of the first part, and the Old Colony Railroad Company, a railroad corporation existing under the laws of the Commonwealth of Massachusetts, party of the second part, both parties owning railroads connecting with each other therein, *witnesseth*, that,

Whereas, The Nantasket Beach Railroad Company, a corporation existing under the laws of the Commonwealth, on the twenty-third day of March, A. D. 1881, conveyed to the Boston Safe Deposit and Trust Company, as trustee, its railroad and all its other corporate property, to secure the payment of bonds issued by it, amounting in all to two hundred and fifty thousand dollars ($250,000); and

Whereas, Said Boston Safe Deposit and Trust Company thereafter resigned its position as trustee under said mortgage, and Herbert L. Harding of said Boston was duly appointed and qualified thereunder as such trustee; and

Whereas, Said Harding, as such trustee, for default in the conditions of said mortgage, took possession of said mortgaged property, and sold the same at public auction to said Arthur W. Moors, and conveyed the same to said Arthur W. Moors; and

Whereas, Said Arthur W. Moors declared that he stood seized of said premises for the benefit of the holders of said mortgage bonds, and would hold, manage, operate and dispose of said premises for the benefit of the holders of said bonds;

Now, therefore, Said Arthur W. Moors, party of the first part, in consideration of the rent, covenants and agreements hereinafter mentioned to be paid, kept and performed by the Old Colony Railroad Company, party of the second part, doth hereby grant, lease and demise unto the party of the second part the Nantasket Beach Railroad, so called, extending from a point on the line of the Old Colony Railroad in Hingham to the steamboat wharf at Windmill Point in Hull, and all the railroad property formerly possessed by the Nantasket Beach Railroad Company (except the Hotel Pemberton property other than as covered by specific descriptions herein, and the tract of about thirteen (13) acres lying upon the opposite side of the railroad and southerly of a parcel of land on Windmill Point herein described), as shown and laid down on plans made by Frederick M. Hersey, dated Boston, 1882, which are hereby referred to, and all and

singular the property, franchises and estate of every kind used and held in connection therewith, whether within or without the location of said railroad, except certain rolling stock and property described in a bill of sale from the party of the first part to the party of the second part of even date herewith, including all the roadway, side tracks, rails, superstructures, viaducts, bridges, station lands and all other lands, station houses, shops, buildings and fixtures connected or used therewith; and also all rights, privileges and franchises which the party of the first part has or can have as such trustee, and including the following described parcels of land, which are now owned and used by the party of the first part as such trustee, as a part of said railroad and property, though not shown upon the location of said railroad filed with the county commissioners, but which are to be taken for all the purposes of this instrument as a part of the railroad and property hereby demised, and hereinafter agreed to be transferred and conveyed to the party of the second part; to wit: —

Two certain parcels of land situated in that part of Hull in the county of Plymouth called Nantasket, bounded and described as follows, to wit: —

The first of said parcels is situated on the north-easterly side of the county road, and is bounded as follows: beginning at a point in the north-easterly line of said county road, one hundred and seventy-three and forty-four one-hundredths (173.44) feet south-easterly from land now or formerly of Ransom, thence running in a curved line to a point in the boundary line of said Ransom's land, distant sixty-two and seventy one-hundredths (62.70) feet north-easterly from said line of said county road, one hundred and fifty and twenty-two one-hundredths (150.22) feet; thence with said line of said Ransom's land, north 87 degrees 35 minutes east, forty-two and thirty-eight one-hundredths (42.38) feet; thence in a curved line (radius, 652 feet), two hundred and fifteen and eighteen one-hundredths (215.18) feet, to said line of said county road; thence by said line of said county road, seventy-seven and eighty-six one-hundredths (77.86) feet to the point of beginning.

The second of said parcels is situated on the south-westerly side of said county road, and is bounded as follows: beginning at a point in the south-westerly line of said county road, at land of Cushing, thence running by said line of said road, south-easterly, eighty (80) feet; thence in a curved line (radius, 625 feet), two hundred and sixty-six and fifty-eight one-hundredths (266.58) feet; thence south 29 degrees 30 minutes east, nine hundred and ninety-three and sixty one-hundredths (993.60) feet; thence in a curve to the right (radius, 1,736 feet), four hundred (400) feet to the flats; thence by the ridge separating the upland from said flats, north-westerly, about sixty-six (66) feet; thence in a curved line to the left (radius, 1,700 feet), north-westerly, two hundred and forty-five (245) feet; thence in a straight line, north-westerly, eighty-nine (89) feet; thence north 33 degrees 34 minutes west, four hundred and ninety-six and ninety-three one-hundredths (496.93) feet; thence north 33 degrees west, five hundred (500) feet; thence north 35 degrees 54 minutes 30 seconds west, three hundred and twenty-four and forty one-hundredths (324.40) feet, to said land of Cushing; thence by said land of Cushing, north 55 degrees 15 minutes east, one hundred and eighty-eight and ninety-five one-hundredths (188.95) feet, to said point of beginning. Excepting herefrom the conveyance of the fee in so much of said described premises as is included in the way one hundred (100) feet wide running from said county road to the steamboat wharf, intending to convey only the railroad right of way over said way within said described limits; also, a right of way thirty-six (36) feet in width, in a curved line, across the flats of said company from the ridge above named, separating said flats from the upland, to the land of heirs of Jacob H. Loud; being the same premises conveyed to said Moors, trustee, by the Nantasket Beach Hotel Company, by deed dated twenty-fourth day of January, 1888, and subject to the restrictions and agreements therein contained. A plan of said premises is hereto annexed, and referred to as a part of the description thereof.

Two certain parcels of land situate near Point Allerton station on said Nantasket Beach Railroad in the town of Hull, county of Plymouth, and bounded and described as follows, to wit: —

The first parcel is bounded north-easterly by the location of the Nantasket Beach Railroad, there measuring about two hundred and thirty feet; southerly by a proposed

street known as "W" Street, there measuring ninety-one (91) feet; and westerly by the county road leading from Nantasket to Hull, there measuring one hundred and seventy-nine and twenty-eight one-hundredths (179.28) feet, and containing eight thousand four hundred and thirty (8,430) square feet, and being the land on which the passenger station at Point Allerton is located.

The second parcel is bounded as follows, to wit: northerly by a passageway leading from the county road easterly, there measuring about two hundred and thirty-five and seventy-four one-hundredths (235.74) feet; easterly by land now or formerly of George Wheatland, trustee, there measuring about two hundred and ninety-four and thirty-four one-hundredths (294.34) feet; and south-westerly by the location of said railroad, there measuring about three hundred and sixty-five (365) feet, and containing twenty-nine thousand eight hundred and five (29,805) square feet, and being the land on which the engine house, car house, turn-table and other property of the Nantasket Beach Railroad Company at Point Allerton is now located. A plan of said premises is hereto annexed and referred to as a part of the description thereof.

A certain parcel of land on Windmill Point, so called, near Pemberton station, bounded and described as follows: —

Beginning at a point in the middle line of the bridge leading to the Pemberton steamboat wharf, so called, on Hull harbor; thence running westerly on said harbor one hundred and forty-five (145) feet to land of the Hotel Pemberton Company; thence northerly by land of said hotel company forty-five and eighty-seven one-hundredths (45.87) feet to a stake at a corner in line with the bottom of the steps at the southerly corner of Hotel Pemberton; thence easterly in a direct line by land of said hotel company one hundred and twenty-five (125) feet to the westerly end of said steps; thence continuing in the same direction forty-one and ninety-seven one-hundredths (41.97) feet by the southerly line of said steps to the easterly end thereof; thence easterly in a direct line one hundred and thirty (130) feet to a point eight and twenty-three one-hundredths (8.23) feet westerly of the south-westerly corner of the Pemberton passenger station; thence northerly, parallel to the westerly end of said station, and eight and twenty-three one-hundredths (8.23) feet distant therefrom, forty (40) feet; thence easterly, parallel to the northerly side of said station, and ten (10) feet distant therefrom, one hundred (100) feet to a corner; thence southerly at right angles to the last-described line ten (10) feet to a corner; thence easterly by a curved line by the fence as now standing on the southerly side of a proposed street, or a private street, seven hundred and eighty-four and fifty-seven one-hundredths (784.57) feet to the westerly line of a town road, if extended northerly across the tracks of the railroad; thence easterly across said street, if extended, about sixty-six and twenty-two one-hundredths (66.22) feet to the easterly line of said street, if extended, at a point forty (40) feet distant northerly at a right angle from the centre line of the main track of the Nantasket Beach Railroad, as the same is now located; thence westerly, parallel to the centre line of the main track of said railroad, and forty feet distant northerly therefrom, eighty-seven and four-tenths (87.4) feet; thence northerly about eighteen (18) feet to a point fifty-seven and one-half (57½) feet distant from said centre line; thence easterly, parallel to said centre line, and fifty-seven and one-half (57½) feet distant therefrom, two hundred and fifteen (215) feet; thence easterly about forty-five (45) feet to a point forty (40) feet distant northerly at right angles from said centre line; thence easterly, parallel to said centre line, and forty (40) feet distant northerly therefrom, about four hundred and twenty-five (425) feet to the southerly side line of location of the Hull and Nantasket Beach division of the Nantasket Beach Railroad; thence easterly in said southerly line of location about three hundred and twenty (320) feet to a point twenty-five (25) feet distant southerly at right angles from the centre line of the main track of said railroad, as the same is now located; thence westerly, parallel to said centre line, and twenty-five (25) feet distant southerly therefrom, about ten hundred and fifteen (1,015) feet to the easterly side of the town road leading to Pemberton station; thence westerly, crossing said street about sixty-seven (67) feet to the intersection of the westerly line of said street with the northerly line of a lane or passageway leading from said street south-westerly to Hull harbor; thence south-westerly by the northerly line of said passageway about one hundred and

twenty-three (123) feet to Hull harbor; thence westerly by Hull harbor about ten hundred and twenty-four (1,024) feet to the point begun at. A plan of said described land is hereto annexed, and referred to as a part of the description thereof.

A certain parcel of land situated in the town of Hingham near the junction of the location of the Old Colony Railroad and the Nantasket Beach Railroad, bounded and described as follows, to wit: —

Beginning at the intersection of the northerly side line of location of the Nantasket Beach Railroad with the easterly line of Summer Street, so called, near the junction of the Nantasket Beach Railroad with the Old Colony Railroad in said Hingham; thence running northerly by said street one hundred and seven and twenty-five one-hundredths (107.25) feet to land now or formerly of Eliza J. H. Andrew; thence easterly by said land now or formerly of said Andrew about eight hundred and eighteen (818) feet to said northerly side line of location; thence south-westerly by said line of location about eight hundred and thirty-five (835) feet to the point begun at, being the land on which the turn-table and side tracks of the Nantasket Beach Railroad are now located, and containing eighty-two thousand (82,000) square feet, more or less.

To have and to hold the same to the party of the second part, its successors and assigns, for and during the term of ninety-nine (99) years from and after the first day of April, A. D. 1888, the party of the second part yielding and paying unto the holders of said bonds the rent hereinafter mentioned in the manner hereinafter provided, and keeping and performing all the covenants and agreements on its part hereinafter contained; and in consideration of the foregoing the party of the second part hereby covenants and agrees with the party of the first part as follows, to wit: —

First. It will pay to the holders of the first mortgage bonds which are numbered from one to two hundred and fifty (1 to 250), both numbers inclusive, and dated the twenty-third day of March, 1881, as the rent under this lease, the sum of three thousand one hundred and twenty-five dollars ($3,125) semi-annually, to wit: on the first day of April and the first day of October in each and every year during said term (or until it shall elect to purchase the demised railroad and property as hereinafter provided), in the manner following and not otherwise; i. e., it will pay twelve dollars and fifty cents ($12.50) on the first day of April, and twelve dollars and fifty cents ($12.50) on the first day of October, in each and every year during said term, to the holder of each of said bonds upon presentation thereof at its treasurer's office in the city of Boston, and the delivery to it to be cancelled of the coupon upon such bond due at that date, until the maturity of said bonds; and thereafter it will pay said sums at said times to the holders of said bonds upon presentation thereof at the office of its treasurer in the city of Boston, and the endorsement of such payment thereon; and, at the first payment of said rent on the first day of October, 1888, which shall be eighteen dollars and seventy-five cents ($18.75) on each coupon, all unpaid coupons up to and including the coupon due on that day on said bonds are to be delivered to it to be cancelled.

But, if the road, franchise and property hereby demised, or any part thereof, shall be taken from the party of the second part, or any lien or incumbrance thereon shall be established, or the party of the second part be in any manner prevented from having the full possession, use and benefit of the demised premises, or any part thereof, at any time during the term of this lease, without fault on its part, then the rent hereby reserved, or a proportionate part thereof, shall abate and cease to be payable until such full possession, use and benefit shall be restored to it, at the expense of the party of the first part.

Second. It will pay all taxes imposed upon said railroad and property or upon said party of the first part on account thereof during said term, and will keep such accounts of the business of said railroad, and make such reports thereof, as may be required at any time by law to be kept and made.

Third. It will maintain, preserve and keep said demised railroad and property in as good order and condition as the same now are during said term, and will save the party of the first part harmless from all loss, cost, damage or liability, caused by or arising out of the operation of said railroad by it.

Fourth. In case of default in the payment in the manner hereinabove provided of the rent hereby reserved for the period of sixty days after the same is due and payable in the manner provided, the party of the first part may enter upon and take possession of the premises hereby demised, and thereby determine the estate hereby granted.

But, if the party of the second part shall at any time refuse to pay such rent, or any part thereof, on the ground that it is not then payable under the provisions of this instrument, such refusal shall not be a default entitling the party of the first part to enter until sixty days after the party of the second part shall have been adjudged liable to make the payment by the final judgment of some court of competent jurisdiction.

And the party of the first part, for himself and his successors in trust, hereby covenants and agrees to and with the party of the second part that he will, and his successors in trust shall, upon request by the party of the second part, its successors or assigns, at any time after twenty (20) years of the term of this lease have expired, upon payment to him or them of one hundred and fifty thousand dollars ($150,000) and the rent then due upon any rent day at the office of the treasurer of the party of the second part, its successors or assigns, in the city of Boston, make, execute and deliver to it or them a good and sufficient conveyance of said demised railroad, property and franchises, with proper convenants of title against any incumbrances made or suffered by him or his successors, and thereupon the rent herein reserved shall cease, and the party of the second part be under no further obligation under this instrument; and upon such payment said bonds shall be surrendered to the party of the second part, its successors or assigns, to be cancelled.

Fifth. It is further agreed, that, at any time after twenty (20) years of the term of this lease have expired, the party of the second part, its successors or assigns, may send written notice by mail, post paid, to the party of the first part, or his successor in said trust, of its intention to purchase the demised railroad, property and franchise upon the then next rent day, by paying him or his successor the sum of one hundred and fifty thousand dollars ($150,000) and the rent then to be due, at the office of its or their treasurer in the city of Boston; and if the party of the first part, or his successor in said trust, shall fail to execute and deliver to the party of the second part, its successor or assigns, upon such next rent day a good and sufficient conveyance of said demised railroad, property and franchise, and accept the said sum of one hundred and fifty thousand dollars ($150,000), and the amount of the rent then due, in the manner hereinabove provided, then the party of the second part may deposit said sum of one hundred and fifty thousand dollars ($150,000) and the amount of the rent then due with the New England Trust Company, or some other trust company doing business in the city of Boston, in trust for the holders of said bonds, as their interest may appear; and thereupon this instrument shall operate as an absolute conveyance of said demised railroad, property and franchise, and have the same effect as against said party of the first part, or his successor in said trust, and the holders of said bonds, as an absolute conveyance thereof then made and executed by the party of the first part, or his successor in said trust, and assented to by the holders of all said bonds.

In witness whereof, the said Arthur W. Moors, trustee, has hereunto set his hand and seal to this and one other instrument of like tenor; and the Old Colony Railroad Company, by its president, Charles F. Choate, has hereunto set its corporate name and seal, the day and year first above written; it being understood, however, that the party of the second part does not hereby agree to the accuracy of the recitals hereinabove contained as to the title of the party of the first part.

(Signed) ARTHUR W. MOORS, *Trustee.*

OLD COLONY RAILROAD COMPANY,

(Signed) By Charles F. Choate, *President.*

Approved:

Fred'k L. Ames,

N. Thayer,

Committee Old Colony Railroad Company Directors.

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. March 30, 1888. Then personally appeared before me one Arthur W. Moors, trustee, and Charles F. Choate, president, and acknowledged the foregoing instrument to be the free act and deed of said Moors, trustee, and of said Old Colony Railroad Company.

(Signed) J. H. BENTON, Jr.,
Justice of the Peace.

LEASE.

MILFORD & WOONSOCKET RAILROAD COMPANY TO NEW YORK & NEW ENGLAND RAILROAD COMPANY.

THIS INDENTURE, made in duplicate this thirtieth day of September, A. D. 1887, by and between the Milford & Woonsocket Railroad Company, a corporation existing under and by virtue of the laws of the Commonwealth of Massachusetts, party of the first part, and hereinafter denominated the lessor, and the New York & New England Railroad Company, a corporation existing under and by virtue of the laws of said Commonwealth, and under and by virtue of the laws of the States of Connecticut, Rhode Island and New York, party of the second part, and hereinafter denominated the lessee,

Witnesseth, That the said parties, each for itself, its successors and assigns, and each in consideration of the grants, covenants and engagements herein made by the other, have granted, covenanted and agreed, and do hereby grant, covenant and agree, each to and with the other, its successors and assigns, as follows, to wit: —

I.

The lessor doth grant, demise and lease unto the lessee, its successors and assigns, its railroad and property of every description (excepting, however, from the property herein demised, all the rolling stock owned by said lessor), as the said railroad is now located in the town of Bellingham in the county of Norfolk, in the towns of Hopedale and Milford in the county of Worcester, and in the towns of Hopkinton and Ashland in the county of Middlesex in said Commonwealth, or as the same shall hereafter be located; including all lands covered by the location of said railroad, as shown by the location plans filed with the county commissioners of said counties of Norfolk, Worcester and Middlesex, and any and all lands outside of said location, now owned by said lessor, its railroads, branches, track, side tracks, road-beds, superstructures, station houses, depot grounds, depots, viaducts, bridges, shops, buildings, fixtures, machinery, tools, furniture and telegraph apparatus, and all rights, franchises, easements, privileges and appurtenances thereto belonging, together with the right to demand and receive all tolls, rent, revenue, income and profits of the demised premises.

TO HAVE AND TO HOLD all and singular the demised premises to the lessee, its successors and assigns, for and during the full term of ninety-nine years from and after the first day of October, A. D. 1887, the said lessee yielding and paying rent, as provided in the article next following, and keeping and performing the terms, conditions and stipulations hereinafter contained, on the part of said lessee, to be kept and performed.

II.

The lessee shall pay to the lessor in each year during the term of this lease (except as hereinafter provided), as rent for the demised premises, a sum equal to fifteen per cent. of the gross receipts of the lessee, derived from the occupation, use and operation of the demised premises, and of the premises covered by the lease of the Milford, Franklin & Providence Railroad, to said lessee of even date herewith: *provided, however*, that whenever fifteen per cent. of said gross receipts in any one year exceeds the sum of

fifteen thousand (15,000) dollars, the said lessee may retain in its possession the amount over and above said sum of fifteen thousand dollars, to be applied by it in payment for permanent improvements and additions made by it, as provided in Article VI. of this lease; and it is further provided that the lessee shall retain in its possession the sum due the lessor as rental under this lease for and during the year ending Sept. 30, 1888, and shall use and expend such sum so retained in putting the premises and property, acquired under this lease and under the lease of the Milford, Franklin & Providence Railroad of even date herewith, in good order and condition; and the first instalment of rent due under this lease to said lessee shall be due and payable on the first day of May, A. D. 1889; said gross receipts of the lessee, of which the lessor is to receive fifteen per cent, shall be determined and made up as follows: —

1. The total receipts for transporting passengers and freight received at one station on the road of the lessor, and delivered at another station on the road of the lessor.

2. The total receipts for transporting passengers and freight received at one station on the road of said Milford, Franklin & Providence Railroad, and delivered at another station on the road of said Milford, Franklin & Providence Railroad.

3. A pro rata portion of the receipts for transporting passengers and freight received at stations on the road of the lessor, and delivered at stations not on the road of the lessor.

4. A pro rata portion of the receipts for transporting passengers and freight received at stations on the road of said Milford, Franklin & Providence Railroad, and delivered at stations not on the road of said Milford, Franklin & Providence Railroad.

5. A pro rata portion of the receipts for transporting passengers and freight received at stations not on the road of the lessor or of said Milford, Franklin & Providence Railroad, and delivered at stations on the road of the lessor, or on the road of said Milford, Franklin & Providence Railroad.

6. A pro rata portion of the receipts for transporting passengers and freight received at stations not on the road of the lessor or of said Milford, Franklin & Providence Railroad, and transported over the road of the lessor or of the said Milford, Franklin & Providence Railroad, to be delivered at stations beyond and not on the road of the lessor or of said Milford, Franklin & Providence Railroad.

The pro rata portion of the receipts due the lessor as above shall be such a proportion of the total receipts of the lessee for transporting passengers and freight over the roads of the lessor and said Milford, Franklin & Providence Railroad, and of the lessee, as the distance said passengers and freight are hauled over the road of the lessor and over said Milford, Franklin & Providence Railroad bears to the total distance hauled over said roads and the road of the lessee. In determining the length of the haul on the road of the lessor, the point where the tracks of said lessor intersect the westerly side line of the location of the Woonsocket division of the railroad of said lessee in said town of Bellingham, shall be considered the southerly terminus of the road of said lessor; and the point where the tracks of said lessor enter upon the location of the Boston & Albany Railroad Company in the town of Ashland, shall be its northerly terminus; and, in determining the length of the haul over the road of the Milford, Franklin & Providence, the point where the tracks of said Milford, Franklin & Providence intersect the westerly side line of the location of the lessee, at or near "Nason's Crossing," so called, in said town of Franklin, shall be considered the easterly terminus of said Milford, Franklin & Providence Railroad; and the point where the tracks of said Milford, Franklin & Providence Railroad enter upon the land owned by the lessee in said town of Bellingham, shall be considered its westerly terminus.

III.

The value of the locomotive engines, cars and other rolling stock owned by the lessor shall be fixed and determined by appraisers at or immediately after the execution of this lease; the appraisal shall be made by two persons, one selected by each party, who, in case of any dispute or disagreement, may choose a third, their expenses to be shared equally by the lessor and the lessee; the lessee shall at any time within five years from and

after the date of the execution of this lease purchase said rolling stock and pay therefor the sum determined by said appraisers to be the value of the same; and, until such purchase, the lessee shall use said rolling stock, and shall pay, semi-annually, as rental for said rolling stock, in addition to the rent hereinbefore specified, a sum equal to six per cent. annually upon the value of said rolling stock as fixed by said appraisers.

IV.

The lessee shall operate said railroad, and shall pay any and all expenses connected with such operation; shall fix and determine all rates for transporting freight and passengers over the leased premises; shall pay all taxes of every description, federal, State or municipal, upon the property, franchise or capital stock of said lessor; and shall save said lessor harmless from all suits, costs, damages and expenses, by reason of any act or omission of said lessee in the use of said demised premises under this lease; and it will, at its own expense, defend all suits brought against said lessor for any such cause, and pay the judgment, if any, therein recovered when demanded on final process.

V.

The lessee shall, at its own expense, maintain and keep the demised premises and all the property and fixtures of every description, which it shall receive under this lease, in as good order and condition as the same are in at the date of this lease, or when received by the lessee; shall keep the premises reasonably insured, and shall apply the proceeds of any insurance to restoring or replacing the property destroyed, or in making permanent improvements not in the nature of ordinary repairs upon the demised premises; shall make all returns required by law, and shall furnish the lessor with such abstracts of accounts as shall enable it to make all returns required of the lessor.

VI.

The lessee shall, from time to time, make such permanent improvements in and upon the demised premises as the requirements of business may make necessary and proper, such as laying a second track, improving the alignment of the road, lengthening turnouts and sidings and making new ones, adding to or improving the passenger and freight houses or freight buildings, water stations and facilities therefor, highway gates, highway bridges, acquiring additional land, or anything of the like nature, or such other permanent improvements, additions or changes in and upon the demised premises as the board of railroad commissioners or other tribunal or court of competent jurisdiction may order; such improvements and additions so made shall be paid for by the lessee; and the lessee may retain in its own possession any or all of the rental accruing to the lessor over and above the sum of fifteen thousand dollars in any one year as a reimbursement to said lessee for the cost of such permanent improvements and additions, with interest thereon at six per cent. per annum, from the time such expenditure is made until the money is so refunded. And it is further agreed that any and all sums so accruing to the lessor as rental, and retained by the lessee, may also be used by said lessee as a reimbursement for the cost of such permanent improvements upon the premises acquired under the lease of the Milford, Franklin & Providence Railroad Company of even date herewith.

The lessee shall keep full and true accounts of the gross receipts derived from the use and occupation of the demised premises and of the premises covered by the lease of the Milford, Franklin & Providence Railroad to the lessee of even date herewith; and shall allow the treasurer of said Milford & Woonsocket Railroad Company, or other person authorized by said company to act for such purpose in its behalf, to inspect, examine and verify such accounts.

VII.

The lessor has good right to lease said premises and property in the manner aforesaid, and shall suffer and permit said lessee, it keeping all the covenants as herein contained, to occupy, possess and enjoy said premises during the term aforesaid,

without molestation or hindrance from it or any person claiming by, from or under it, or from any other person; and shall at its own expense prosecute and defend all suits or proceedings to which it is a party now pending in court, or before the county commissioners, or which may hereafter be entered against it by reason of any act or omission of said lessor, and shall pay the judgment or award, if any, therein recovered when demanded on final process.

VIII.

The lessor shall, at its own expense, maintain its existence and organization as a corporation during the continuance of this lease, and to that end shall comply with all the requisites and forms of law; shall do all acts and things, and execute all legal instruments necessary and proper to put and secure the lessee in the full enjoyment of all the property, rights, franchises and interests herein demised, and to carry into effect the true intent and meaning of this lease; and shall permit the lessee to use the name of the lessor (and hereby grants the use of such name irrevocably) in all legal proceedings, and in all cases needful for obtaining, holding and enjoying the premises hereby demised, and for all purposes consistent with the true scope and intent of this lease.

IX.

The lessor shall furnish the lessee, upon the day this lease takes effect, or as soon thereafter as it conveniently can, a detailed description and statement of the title to the real estate owned or controlled by it and hereby demised, including the lands within its location as well as those without; and, as a part of said statement, shall furnish copies of all deeds, awards of the county commissioners, and other muniments of title affecting such real estate.

X.

An inventory and appraisal shall be made of such materials acceptable to the lessee for the operation and maintenance of said roads as may be on hand and delivered to it at the date of this lease, which, if accepted by the said lessee, shall be paid for as supplies delivered to it with the current payments made by it for supplies delivered at that date. The said inventory and appraisal shall be made by two persons, one selected by each party, who, in case of any dispute or disagreement, may choose a third, their expenses to be shared equally by the lessor and the lessee.

XI.

This lease is upon the express condition and stipulation, that, if the lessee shall neglect and refuse to pay the rental herein reserved, or neglect or fail to perform any or either of the covenants on its part to be performed, for more than six months after written notice from the directors of the lessor of such neglect, refusal or failure, and that if continued it may, at the option of said lessor, be regarded as a forfeiture of this lease, or if said leased premises shall be taken from said lessee, its successors or assigns by any legal process, then and in either of such cases the said lessor may lawfully at any time after the expiration of said six months, and while such neglect or default continues, without further notice or demand, enter into and upon the leased premises or any part thereof in the name of the whole, and repossess the same as of its former estate, and expel the lessee and those claiming under it without prejudice to any remedies which might otherwise be used for arrears of rent or preceding breach of covenants.

XII.

In case of any disagreement between the parties hereto as to the true intent and meaning of this lease or any part thereof, or as to anything done under and by virtue of it, or growing out of it, the matter in controversy shall be referred by written submission to the arbitration of referees to be chosen in the manner following: one shall be chosen by each of the parties hereto, or, if either shall unreasonably fail or neglect to appoint a referee when requested by the other, the board of railroad commissioners may, after due notice to the party so failing or neglecting, appoint a referee. The third shall be

selected by the two so chosen. The arbitrators shall hear the parties, after due notice to each of them, and if either party fail to attend after such notice, may proceed *ex parte*. The award in writing of said arbitrators or a majority of them, being duly notified to the parties, shall be final and conclusive upon them.

In witness whereof, the said Milford & Woonsocket Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by its president, and the said New York & New England Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by its vice-president, the day and year first above written.

MILFORD & WOONSOCKET RAILROAD COMPANY,
By Wm. F. Draper, *President.*

NEW YORK & NEW ENGLAND RAILROAD COMPANY,
By Wm. P. Shinn, *Vice-President.*

Signed, sealed and delivered in presence of
James W. Perkins, *Secretary.*

Attest:

J. E. Walker, *Treasurer.*

[Seal of M. & W. R. R. Co.]

Attest:

James W. Perkins, *Secretary.*

[Seal of N. Y. & N. E. R. R. Co.]

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Oct. 11, 1887. Then personally appeared before me the above-named Wm. P. Shinn, and acknowledged the foregoing instrument to be the free act and deed of the New York & New England Railroad Company.

James W. Perkins,
Justice of the Peace.

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Oct. 11, 1887. Then personally appeared before me the above-named Wm. F. Draper, and acknowledged the foregoing instrument to be the free act and deed of the Milford & Woonsocket Railroad Company.

James W. Perkins,
Justice of the Peace.

LEASE.

MILFORD, FRANKLIN & PROVIDENCE RAILROAD COMPANY TO NEW YORK & NEW ENGLAND RAILROAD COMPANY.

This Indenture, made in duplicate this thirtieth day of September, A. D. 1887, by and between the Milford, Franklin & Providence Railroad Company, a corporation existing under and by virtue of the laws of the Commonwealth of Massachusetts, party of the first part, and hereinafter denominated the lessor, and the New York & New England Railroad Company, a corporation existing under and by virtue of the laws of said Commonwealth, and under and by virtue of the laws of the States of Connecticut, Rhode Island and New York, party of the second part, and hereinafter denominated the lessee,

Witnesseth, That the said parties, each for itself, its successors and assigns, and each in consideration of the grants, covenants and engagements herein made by the other,

have granted, convenanted and agreed, and do hereby grant, covenant and agree, each to and with the other, its successors and assigns, as follows, to wit: —

I.

The lessor doth grant, demise and lease unto the lessee, its successors and assigns, its railroad and property of every description (excepting, however, from the property herein demised, all the rolling stock owned by said lessor), as the said railroad is now located in the towns of Franklin and Bellingham in the county of Norfolk, in said Commonwealth, or as the same shall hereafter be located; including all lands covered by the location of said railroad, as shown by the location plans filed with the county commissioners of said county of Norfolk, and any and all lands outside of said location, now owned by said lessor, its railroads, branches, track, side tracks, road-beds, superstructures, station houses, depot grounds, depots, viaducts, bridges, shops, buildings, fixtures, machinery, tools, furniture and telegraph apparatus, and all rights, franchises, easements, privileges and appurtenances thereto belonging, together with the right to demand and receive all tolls, rent, revenue, income and profits of the demised premises.

To HAVE AND TO HOLD all and singular the demised premises to the lessee, its successors and assigns, for and during the full term of ninety-nine years from and after the first day of October, A. D. 1887, the said lessee yielding and paying rent, as provided in the article next following, and keeping and performing the terms, conditions and stipulations hereinafter contained, on the part of said lessee, to be kept and performed.

II.

The lessee shall pay to the lessor in each year during the term of this lease (except as hereinafter provided), as rent for the demised premises, a sum equal to ten per cent. of the gross receipts of the lessee derived from the occupation, use and operation of the demised premises, and of the premises covered by the lease of the Milford & Woonsocket Railroad, to said lessee of even date herewith: *provided, however*, that, whenever ten per cent. of said gross receipts in any one year exceeds the sum of ten thousand (10,000) dollars, the said lessee may retain in its possession the amount over and above said sum of ten thousand dollars, to be applied by it in payment for permanent improvements and additions made by it, as provided in Article V. of this lease; and it is further provided that the lessee shall retain in its possession the sum due the lessor as rental under this lease for and during the year ending Sept. 30, 1888, and shall use and expend such sum so retained in putting the premises and property, acquired under this lease and under the lease of the Milford & Woonsocket Railroad of even date herewith, in good order and condition; and the first instalment of rent due under this lease to said lessee shall be due and payable on the first day of May, A. D. 1889; said gross receipts of the lessee, of which the lessor is to receive ten per cent, shall be determined and made up as follows: —

1. The total receipts for transporting passengers and freight received at one station on the road of the lessor, and delivered at another station on the road of the lessor.

2. The total receipts for transporting passengers and freight received at one station on the road of said Milford & Woonsocket Railroad, and delivered at another station on the road of said Milford & Woonsocket Railroad.

3. A pro rata portion of the receipts for transporting passengers and freight received at stations on the road of the lessor, and delivered at stations not on the road of the lessor.

4. A pro rata portion of the receipts for transporting passengers and freight received at stations on the road of said Milford & Woonsocket Railroad, and delivered at stations not on the road of said Milford & Woonsocket Railroad.

5. A pro rata portion of the receipts for transporting passengers and freight received at stations not on the road of the lessor or of said Milford & Woonsocket Railroad, and delivered at stations on the road of the lessor, or on the road of said Milford & Woonsocket Railroad.

6. A pro rata portion of the receipts for transporting passengers and freight received at stations not on the road of the lessor or of said Milford & Woonsocket Railroad, and

transported over the road of the lessor or of the said Milford & Woonsocket Railroad, to be delivered at stations beyond and not on the road of the lessor or of said Milford & Woonsocket Railroad.

The pro rata portion of the receipts due the lessor as above shall be such a proportion of the total receipts of the lessee for transporting passengers and freight over the roads of the lessor and said Milford & Woonsocket Railroad and of the lessee, as the distance said passengers and freight are hauled over the road of the lessor and over said Milford & Woonsocket Railroad bears to the total distance hauled over said roads and the road of the lessee. In determining the length of the haul over the road of the lessor, the point where the tracks of said lessor intersect the westerly side line of the location of the lessee at or near "Nason's Crossing," so called, in said town of Franklin, shall be considered the easterly terminus of the road of the lessor; and the point where the tracks of the lessor enter upon the land owned by the lessee in said town of Bellingham shall be considered its westerly terminus; and, in determining the length of the haul on the road of said Milford & Woonsocket Railroad, the point where the tracks of said Milford & Woonsocket Railroad intersect the westerly side line of the location of the Woonsocket division of the railroad of said lessee in said town of Bellingham shall be considered the southerly terminus of the road of said Milford & Woonsocket Railroad; and the point where the tracks of said company enter upon the location of the Boston & Albany Railroad Company, in the town of Ashland, shall be the northerly terminus.

III.

The lessee shall operate said railroad, and shall pay any and all expenses connected with such operation; shall fix and determine all rates for transporting freight and passengers over the leased premises; shall pay all taxes of every description, federal, State or municipal, upon the property, franchise or capital stock of said lessor; and shall save said lessor harmless from all suits, costs, damages and expenses, by reason of any act or omission of said lessee in the use of said demised premises under this lease; and it will, at its own expense, defend all suits brought against said lessor for any such cause, and pay the judgment, if any, therein recovered when demanded on final process.

IV.

The lessee shall, at its own expense, maintain and keep the demised premises, and all the property and fixtures of every description, which it shall receive under this lease, in as good order and condition as the same are in at the date of this lease, or when received by the lessee; shall keep the premises reasonably insured, and shall apply the proceeds of any insurance to restoring or replacing the property destroyed, or in making permanent improvements not in the nature of ordinary repairs upon the demised premises; shall make all returns required by law, and shall furnish the lessor with such abstracts of accounts as shall enable it to make all returns required of the lessor.

V.

The lessee shall, from time to time, make such permanent improvements in and upon the demised premises as the requirements of business may make necessary and proper, such as laying a second track, improving the alignment of the road, lengthening turnouts and sidings and making new ones, adding to or improving the passenger and freight houses or freight buildings, water stations and facilities therefor, highway gates, highway bridges, acquiring additional land, or anything of the like nature, or such other permanent improvements, additions or changes, in and upon the demised premises, as the board of railroad commissioners or other tribunal or court of competent jurisdiction may order; such improvements and additions so made shall be paid for by the lessee; and the lessee may retain in its own possession any or all of the rental accruing to the lessor over and above the sum of ten thousand dollars in any one year, as a reimbursement to said lessee for the cost of such permanent improvements and additions, with interest thereon at six per cent. per annum, from the time such expenditure is made until the money is so refunded. And it is further agreed that any and all sums so accruing to the lessor as rental, and retained by the lessee, may also be used by said lessee as

a reimbursement for the cost of such permanent improvements upon the premises acquired under the lease of the Milford & Woonsocket Railroad Company of even date herewith.

VI.

The lessee shall keep full and true accounts of the gross receipts derived from the use and occupation of the demised premises and of the premises covered by the lease of the Milford & Woonsocket Railroad to the lessee of even date herewith; and shall allow the treasurer of said Milford, Franklin & Providence Railroad Company, or other person authorized by said company to act for such purpose in its behalf, to inspect, examine and verify such accounts.

VII.

The lessor has good right to lease said premises and property in the manner aforesaid, and shall suffer and permit said lessee, it keeping all the covenants as herein contained, to occupy, possess and enjoy said premises during the term aforesaid, without molestation or hindrance from it or any person claiming by, from or under it, or from any other person; and shall, at its own expense, prosecute and defend all suits or proceedings to which it is a party now pending in court, or before the county commissioners, or which may hereafter be entered against it by reason of any act or omission of said lessor, and shall pay the judgment or award, if any, therein recovered when demanded on final process.

VIII.

The lessor shall, at its own expense, maintain its existence and organization as a corporation during the continuance of this lease, and to that end shall comply with all the requisites and forms of law; shall do all acts and things, and execute all legal instruments necessary and proper to put and secure the lessee in the full enjoyment of all the property, rights, franchises and interests herein demised, and to carry into effect the true intent and meaning of this lease; and shall permit the lessee to use the name of the lessor (and hereby grants the use of such name irrevocably) in all legal proceedings, and in all cases needful for obtaining, holding and enjoying the premises hereby demised, and for all purposes consistent with the true scope and intent of this lease.

IX.

The lessor shall furnish the lessee, upon the day this lease takes effect, or as soon thereafter as it conveniently can, a detailed description and statement of the title to the real estate owned or controlled by it and hereby demised, including the lands within its location as well as those without; and as a part of said statement, shall furnish copies of all deeds, awards of the county commissioners, and other muniments of title affecting such real estate.

X.

This lease is upon the express condition and stipulation, that, if the lessee shall neglect and refuse to pay the rental herein reserved, or neglect or fail to perform any or either of the covenants on its part to be performed, for more than six months after written notice from the directors of the lessor of such neglect, refusal or failure, and that if continued it may, at the option of said lessor, be regarded as a forfeiture of this lease, or if said leased premises shall be taken from said lessee, its successors or assigns, by any legal process, then and in either of such cases the said lessor may lawfully at any time after the expiration of said six months, and while such neglect or default continues, without further notice or demand, enter into and upon the leased premises or any part thereof in the name of the whole, and repossess the same as of its former estate, and expel the lessee and those claiming under it without prejudice to any remedies which might otherwise be used for arrears of rent or preceding breach of covenants.

XI.

In case of any disagreement between the parties hereto as to the true intent and meaning of this lease or any part thereof, or as to anything done under and by virtue of it, or growing out of it, the matter in controversy shall be referred by written submission

to the arbitration of referees to be chosen in the manner following: one shall be chosen by each of the parties hereto, or, if either shall unreasonably fail or neglect to appoint a referee when requested by the other, the board of railroad commissioners may, after due notice to the party so failing or neglecting, appoint a referee. The third shall be selected by the two so chosen. The arbitrators shall hear the parties, after due notice to each of them, and if either party fail to attend after such notice, may proceed *ex parte*. The award in writing of said arbitrators or a majority of them, being duly notified to the parties, shall be final and conclusive upon them.

In witness whereof, the said Milford, Franklin & Providence Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by its president, and the said New York & New England Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by its vice-president, the day and year first above written.

MILFORD, FRANKLIN & PROVIDENCE RAILROAD COMPANY,
By James P. Ray, *President*.

NEW YORK & NEW ENGLAND RAILROAD COMPANY,
By Wm. P. Shinn, *Vice-President*.

Signed, sealed and delivered in presence of
James W. Perkins, *Secretary*.

Attest: George W. Wiggin, *Clerk*.

[Seal of M. F. & P. R. R. Co.]

Attest: James W. Perkins, *Secretary*.

[Seal of N. Y. & N. E. R. R. Co.]

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Oct. 22, 1887. Then personally appeared before me the above-named Wm. P. Shinn, and acknowledged the foregoing instrument to be the free act and deed of the New York & New England Railroad Company.

James W. Perkins,
Justice of the Peace.

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Oct. 22, 1887. Then personally appeared before me the above-named James P. Ray, and acknowledged the foregoing instrument to be the free act and deed of the Milford, Franklin & Providence Railroad Company.

James W. Perkins,
Justice of the Peace.

LEASE.

RHODE ISLAND & MASSACHUSETTS RAILROAD COMPANY (IN MASSACHUSETTS) TO NEW YORK & NEW ENGLAND RAILROAD COMPANY.

This Indenture, made in duplicate this twenty-first day of November, A. D. 1887, by and between the Rhode Island & Massachusetts Railroad Company, a corporation existing under and by virtue of the laws of the Commonwealth of Massachusetts, party of the first part, and hereinafter denominated the lessor, and the New York & New England Railroad Company, a corporation existing under and by virtue of the laws of said Commonwealth, and under and by virtue of the laws of the States of Connecticut, Rhode

Island and New York, party of the second part, and hereinafter denominated the lessee,

Witnesseth, That the said parties, each for itself, its successors and assigns, and each in consideration of the grants, covenants and engagements herein made by the other, have granted, covenanted and agreed, and do hereby grant, covenant and agree, each to and with the other, its successors and assigns, as follows, to wit: —

I.

The lessor doth grant, demise and lease unto the lessee, its successors and assigns, its railroad, property, rights and franchises of every description, as the said railroad is now located in the towns of Franklin and Wrentham in the county of Norfolk in said Commonwealth, and in the town of Attleborough in the county of Bristol in said Commonwealth, or as the same shall be hereafter located; including all lands covered by the location of said railroad, as shown by the location plans filed with the county commissioners of said counties of Norfolk and Bristol, and any and all lands outside of said location, now owned by said lessor, its railroads, branches, track, side tracks, road-beds, superstructures, station houses, depot grounds, depots, viaducts, bridges, shops, buildings, fixtures, machinery, tools, furniture and telegraph apparatus, and all rights, franchises, easements, privileges and appurtenances thereto belonging, together with the right to demand and receive all tolls, rent, revenue, income and profits of the demised premises.

To have and to hold all and singular the demised premises to the lessee, its successors and assigns, for and during the full term of ninety-nine years from and after the first day of October, A. D. 1887, the said lessee yielding and paying rent, as provided in the article next following, and keeping and performing the terms, conditions and stipulations hereinafter contained, on the part of the lessee, to be kept and performed.

II.

The lessee shall pay to the lessor, as rent for the demised premises, the sum of ten thousand (10,000) dollars in each year during the term of this lease, payable semi-annually in equal instalments on the first days of April and October, the first of said instalments to be payable on the first day of April, A. D. 1888.

III.

The lessee shall operate said railroad, and shall pay any and all expenses connected with such operation; and shall pay all taxes of every description, federal, State or municipal, upon the property, franchise or capital stock of said lessor; and shall save said lessor harmless from all suits, costs, damages and expenses, by reason of any act or omission of said lessee in the use of said demised premises under this lease; and it will, at its own expense, defend all suits brought against said lessor for any such cause, and pay the judgment, if any, therein recovered when demanded on final process.

IV.

The lessee shall, at its own expense, maintain and keep the demised premises and all the property and fixtures of every description which it shall receive under this lease in as good order and condition as the same are in at the date of this lease, or when received by the lessee; shall keep the premises reasonably insured, and shall apply the proceeds of any insurance to restoring or replacing the property destroyed, or in making permanent improvements not in the nature of ordinary repairs upon the demised premises; shall make all returns required by law, and shall furnish the lessor with such abstracts of accounts as shall enable it to make all returns required of the lessor.

V.

The lessee shall, from time to time, at the expense of the lessor, make such permanent improvements in and upon the demised premises as it may deem necessary and proper, such as laying a second track, improving the alignment of the road, lengthening turnouts and sidings and making new ones, adding to the passenger and freight houses or freight buildings, water stations and facilities therefor, highway gates, highway bridges, acquiring additional land, or anything of the like nature, or such other permanent im-

provements, additions or changes in and upon the demised premises as the board of railroad commissioners or other tribunal or court of competent jurisdiction may order or it may deem necessary; all such improvements so made at the expense of said lessor not to exceed in the aggregate one hundred and eighty thousand dollars ($180,000).

And the said lessor shall pay to said lessee, semi-annually, on the days hereinbefore fixed for the payment of rent, the cost of such improvements or additions, upon the certificate of the chief engineer and auditor of said lessee; for the use of said additions and improvements made at the expense of said lessor, said lessee shall pay as rent and in addition to the rent heretofore specified, a sum equal to six per cent. upon the sums so expended and refunded to said lessee, payable semi-annually at the times hereinbefore provided for the payment of rent; and if the lessor shall elect to raise the money for the cost of the improvements or additions aforesaid by issuing its bonds bearing interest at a rate not exceeding six per cent. per annum, the lessee shall give its obligation guaranteeing the interest due under said bonds: *provided, however*, the amount of bonds so issued from time to time shall not exceed the amount previously refunded to said lessee for the cost of the improvements and additions aforesaid; and *provided, also*, that the lessee, if it elects so to do, may pay the sum specified to be paid as rent for the use of said additions and improvements, by paying the interest due under and by virtue of such bonds to the persons thereto entitled.

VI.

The lessor also covenants that it has good right to lease said premises and property, in the manner aforesaid, and shall suffer and permit said lessee, it keeping all the covenants as herein contained, to occupy, possess and enjoy said premises during the term aforesaid, without molestation or hindrance from it, or any person claiming by, from or under it, or from any other person; and shall, at its own expense, prosecute and defend all suits or proceedings to which it is a party now pending in court, or before the county commissioners, or which may hereafter be entered against it by reason of any act or omission of said lessor, and shall pay the judgment or award, if any, therein recovered when demanded on final process.

VII.

The lessor shall, at its own expense, maintain its existence and organization as a corporation during the continuance of this lease, and to that end shall comply with all the requisites and forms of law; and shall do all acts and things, and execute all legal instruments necessary and proper to put and secure the lessee in the full enjoyment of all the property, rights, franchises and interests herein demised, and to carry into effect the true intent and meaning of this lease; and shall permit the lessee to use the name of the lessor (and hereby grants the use of such name irrevocably) in all legal proceedings, and in all cases needful for obtaining, holding and enjoying the premises hereby demised, and for all other purposes.

VIII.

The lessor shall furnish the lessee, upon the day this lease takes effect, or as soon thereafter as it conveniently can, a correct detailed statement of the title to the real estate owned or controlled by it and hereby demised, including the lands within its location as well as those without; and, as a part of said statement, shall furnish copies of all deeds, awards of the county commissioners, and other muniments of title affecting such real estate.

IX.

That the property herein demised and to be accounted for at the expiration or earlier termination of this lease may be accurately determined, there shall be made, as of the day when this lease takes effect, a full, complete and particular inventory and description of all real estate and property, and a description and appraisal of all personal property belonging to the lessor, and coming into the possession of the lessee by virtue of

this lease. A copy of such inventory, description and appraisal shall be furnished to each party, and the same shall be evidence in any and all cases in which the value and condition of said property at the time of making this lease may arise. The said inventory, description and appraisal shall be made by two persons, one selected by each party, who, in case of any dispute or disagreement, may choose a third, their expenses to be shared equally by the lessor and lessee; any maps, plans or other papers necessary therefor to be furnished by the lessor. And it is further agreed, that, on the termination of the lease, whether the same is terminated before or at the end of the term, a like inventory and appraisal shall be made in like manner of all property, real and personal, surrendered to the lessor; and if the then value of the personal property surrendered (exclusive of the additions thereto, paid for by said lessor as aforesaid) is greater or less than the then appraised value would have been, had the property surrendered been the same and in the same repair (reasonable use and wear thereof always excepted) as described in the inventory and appraisal made at the commencement of the term aforesaid, the difference shall be paid in money.

X.

This lease is upon the express condition and stipulation, that, if the lessee shall neglect and refuse to pay the rental herein reserved for more than six months after written notice from the directors of the lessor of such neglect and refusal, and that if continued it will be regarded as a forfeiture of this lease, or if said leased premises shall be taken from said lessee, its successors or assigns, by any legal process, then and in either of such cases the said lessor may lawfully at any time after the expiration of said six months, and while such neglect or default continues, without further notice or demand, enter into and upon the leased premises, or any part thereof, in the name of the whole, and repossess the same as of its former estate, and expel the lessee and those claiming under it without prejudice to any remedies which might otherwise be used for arrears of rent or preceding breach of covenants.

XI.

In case of any disagreement between the parties hereto as to the true intent and meaning of this lease, or any part thereof, or as to anything done under and by virtue of it, or growing out of it, the matter in controversy shall be referred by written submission to the arbitration of referees, to be chosen in the manner following: one shall be chosen by each of the parties hereto, or, if either shall unreasonably fail or neglect to appoint a referee when requested by the other, the railroad commissioner, or board of railroad commissioners, may, after due notice to the party so failing or neglecting, appoint a referee. The third shall be selected by the two thus chosen. The arbitrators shall hear the parties, after due notice to each of them, and if either party fail to attend after such notice, may proceed *ex parte*. The award in writing of such arbitrators, or a majority of them, being duly notified to the parties, shall be final and conclusive upon them.

In witness whereof, the said Rhode Island & Massachusetts Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by James P. Ray, its president, and the said New York & New England Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by William P. Shinn, its vice-president, and James W. Perkins, its secretary, the day and year first above written.

In witness whereof, the said Rhode Island & Massachusetts Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by James P. Ray, its president, and the said New York & New England Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by

William P. Shinn, its vice-president, and James W. Perkins, its secretary, the day and year first above written.

RHODE ISLAND & MASSACHUSETTS RAILROAD COMPANY,
By JAMES P. RAY, *President.*
GEORGE W. WIGGIN, *Secretary.*

[Seal of R. I. & Mass. R. R. Co in Mass.]

NEW YORK & NEW ENGLAND RAILROAD COMPANY,
By WM. P. SHINN, *Vice-President.*
JAMES W. PERKINS, *Secretary.*

[Seal of N. Y. & N. E. R. R. Co.]

COMMONWEALTH OF MASSACHUSETTS.

SUFFOLK, ss. BOSTON, Nov. 21, 1887. Then personally appeared before me the above-named Wm. P. Shinn and James W. Perkins, and acknowledged the foregoing instrument to be the free act and deed of the New York & New England Railroad Company.

R. M. SALTONSTALL,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

NORFOLK, ss. FRANKLIN, Nov. 21, 1887. Then personally appeared before me the above-named James P. Ray, and acknowledged the foregoing instrument to be the free act and deed of the Rhode Island & Massachusetts Railroad Company.

WILLIAM A. WYCKOFF,
Justice of the Peace.

LEASE.

RHODE ISLAND & MASSACHUSETTS RAILROAD COMPANY (IN RHODE ISLAND) TO NEW YORK & NEW ENGLAND RAILROAD COMPANY.

THIS INDENTURE, made in duplicate this twenty-first day of November, A. D. 1887, by and between the Rhode Island & Massachusetts Railroad Company, a corporation existing under and by virtue of the laws of the State of Rhode Island, party of the first part, and hereinafter denominated the lessor, and the New York & New England Railroad Company, a corporation existing under and by virtue of the laws of said State of Rhode Island, and under and by virtue of the laws of the States of Massachusetts, Connecticut and New York, party of the second part, and hereinafter denominated the lessee,

Witnesseth, That the said parties, each for itself, its successors and assigns, and each in consideration of the grants, covenants and engagements herein made by the other, have granted, covenanted and agreed, and do hereby grant, covenant and agree, each to and with the other, its successors and assigns, as follows, to wit: —

I.

The lessor doth grant, demise and lease unto the lessee, its successors and assigns, its railroad, property, rights and franchises of every description, as the said railroad is now located in the town of Cumberland in said State of Rhode Island, beginning at a point in the northerly boundary line between said States of Massachusetts and Rhode Island, where the tracks of said lessor connect with the tracks of the Rhode Island & Massachusetts Railroad Company of Massachusetts; thence in a southerly direction to the village of Valley Falls in said town of Cumberland, or as the same shall be hereafter located; including all lands covered by the location of said railroad, as shown by the

location now on file, and any and all lands outside of said location, now owned by said lessor, its railroads, branches, track, side tracks, road-beds, superstructures, station houses, depot grounds, depots, viaducts, bridges, shops, buildings, fixtures, machinery, tools, furniture and telegraph apparatus, and all rights, franchises, easements, privileges and appurtenances thereto belonging, together with the right to demand and receive all tolls, rent, revenue, income and profits of the demised premises.

To HAVE AND TO HOLD all and singular the demised premises to the lessee, its successors and assigns, for and during the full term of ninety-nine years from and after the first day of October, A. D. 1887, the said lessee yielding and paying rent, as provided in the article next following, and keeping and performing the terms, conditions and stipulations hereinafter contained, on the part of the lessee, to be kept and performed.

II.

The lessee shall pay to the lessor, as rent for the demised premises, the sum of ten thousand (10,000) dollars in each year during the term of this lease, payable semi-annually in equal instalments on the first days of April and October, the first of said instalments to be payable on the first day of April, A. D. 1888.

III.

The lessee shall operate said railroad, and shall pay any and all expenses connected with such operation; and shall pay all taxes of every description, federal, State or municipal, upon the property, franchise or capital stock of said lessor; and shall save said lessor harmless from all suits, costs, damages and expenses, by reason of any act or omission of said lessee in the use of said demised premises under this lease; and it will, at its own expense, defend all suits brought against said lessor for any such cause, and pay the judgment, if any, therein recovered when demanded on final process.

IV.

The lessee shall, at its own expense, maintain and keep the demised premises and all the property and fixtures of every description which it shall receive under this lease in as good order and condition as the same are in at the date of this lease, or when received by the lessee; shall keep the premises reasonably insured, and shall apply the proceeds of any insurance to restoring or replacing the property destroyed, or in making permanent improvements not in the nature of ordinary repairs upon the demised premises; shall make all returns required by law, and shall furnish the lessor with such abstracts of accounts as shall enable it to make all returns required of the lessor.

V.

The lessee shall, from time to time, at the expense of the lessor, make such permanent improvements in and upon the demised premises as it may deem necessary and proper, such as laying a second track, improving the alignment of the road, lengthening turnouts and sidings and making new ones, adding to the passenger and freight houses or freight buildings, water stations and facilities therefor, highway gates, highway bridges, acquiring additional land, or anything of the like nature, or such other permanent improvements, additions or changes in and upon the demised premises as the board of railroad commissioners or other tribunal or court of competent jurisdiction may order or it may deem necessary; all such improvements so made at the expense of said lessor not to exceed in the aggregate two hundred thousand dollars ($200,000).

And the said lessor shall pay to said lessee, semi-annually, on the days hereinbefore fixed for the payment of rent, the cost of such improvements or additions, upon the certificate of the chief engineer and auditor of said lessee; for the use of said additions and improvements made at the expense of said lessor, said lessee shall pay as rent and in addition to the rent heretofore specified, a sum equal to six per cent. upon the sums so expended and refunded to said lessee, payable semi-annually at the times hereinbefore provided for the payment of rent; and if the lessor shall elect to raise the money for the cost of the improvements or additions aforesaid by issuing its bonds bearing interest at a rate not exceeding six per cent. per annum, the lessee shall give its obliga-

tion guaranteeing the interest due under said bonds: *provided, however*, the amount of bonds so issued from time to time shall not exceed the amount previously refunded to said lessee for the cost of the improvements and additions aforesaid; and *provided, also*, that the lessee, if it elects so to do, may pay the sum specified to be paid as rent for the use of said additions and improvements, by paying the interest due under and by virtue of such bonds to the persons thereto entitled.

VI.

The lessor also covenants that it has good right to lease said premises and property, in the manner aforesaid, and shall suffer and permit said lessee, it keeping all the covenants as herein contained, to occupy, possess and enjoy said premises during the term aforesaid, without molestation or hindrance from it, or any person claiming by, from or under it, or from any other person; and shall, at its own expense, prosecute and defend all suits or proceedings to which it is a party now pending in court, or before the county commissioners, or which may hereafter be entered against it by reason of any act or omission of said lessor, and shall pay the judgment or award, if any, therein recovered when demanded on final process.

VII.

The lessor shall, at its own expense, maintain its existence and organization as a corporation during the continuance of this lease, and to that end shall comply with all the requisites and forms of law; and shall do all acts and things, and execute all legal instruments necessary and proper to put and secure the lessee in the full enjoyment of all the property, rights, franchises and interests herein demised, and to carry into effect the true intent and meaning of this lease; and shall permit the lessee to use the name of the lessor (and hereby grants the use of such name irrevocably) in all legal proceedings, and in all cases needful for obtaining, holding and enjoying the premises hereby demised, and for all other purposes.

VIII.

The lessor shall furnish the lessee, upon the day this lease takes effect, or as soon thereafter as it conveniently can, a correct detailed statement of the title to the real estate owned or controlled by it and hereby demised, including the lands within its location as well as those without; and, as a part of said statement, shall furnish copies of all deeds, awards of the county commissioners, and other muniments of title affecting such real estate.

IX.

That the property herein demised and to be accounted for at the expiration or earlier termination of this lease may be accurately determined, there shall be made, as of the day when this lease takes effect, a full, complete and particular inventory and description of all real estate and property, and a description and appraisal of all personal property belonging to the lessor, and coming into the possession of the lessee by virtue of this lease. A copy of such inventory, description and appraisal shall be furnished to each party, and the same shall be evidence in any and all cases in which the value and condition of said property at the time of making this lease may arise. The said inventory, description and appraisal shall be made by two persons, one selected by each party, who, in case of any dispute or disagreement, may choose a third, their expenses to be shared equally by the lessor and lessee; any maps, plans or other papers necessary therefor to be furnished by the lessor. And it is further agreed, that, on the termination of the lease, whether the same is terminated before or at the end of the term, a like inventory and appraisal shall be made in like manner of all property, real and personal, surrendered to the lessor; and if the then value of the personal property surrendered (exclusive of the additions thereto, paid for by said lessor as aforesaid) is greater or less than the then appraised value would have been, had the property surrendered been the same and in the same repair (reasonable use and wear thereof always excepted) as described in the inventory and appraisal made at the commencement of the term aforesaid, the difference shall be paid in money.

X.

This lease is upon the express condition and stipulation, that, if the lessee shall neglect and refuse to pay the rental herein reserved for more than six months after written notice from the directors of the lessor of such neglect and refusal, and that if continued it will be regarded as a forfeiture of this lease, or if said leased premises shall be taken from said lessee, its successors or assigns, by any legal process, then and in either of such cases the said lessor may lawfully at any time after the expiration of said six months, and while such neglect or default continues, without further notice or demand, enter into and upon the leased premises, or any part thereof, in the name of the whole, and repossess the same as of its former estate, and expel the lessee and those claiming under it without prejudice to any remedies which might otherwise be used for arrears of rent or preceding breach of covenants.

XI.

In case of any disagreement between the parties hereto as to the true intent and meaning of this lease, or any part thereof, or as to anything done under and by virtue of it, or growing out of it, the matter in controversy shall be referred by written submission to the arbitration of referees, to be chosen in the manner following: one shall be chosen by each of the parties hereto, or, if either shall unreasonably fail or neglect to appoint a referee when requested by the other, the railroad commissioner, or board of railroad commissioners, may, after due notice to the party so failing or neglecting, appoint a referee. The third shall be selected by the two thus chosen. The arbitrators shall hear the parties, after due notice to each of them, and if either party fail to attend after such notice, may proceed *ex parte*. The award in writing of such arbitrators, or a majority of them, being duly notified to the parties, shall be final and conclusive upon them.

In witness whereof, the said Rhode Island & Massachusetts Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by Jonathan Chace, its president, and the said New York & New England Railroad Company has caused its corporate seal to be hereto affixed, and these presents to be signed by William P. Shinn, its vice-president, and James W. Perkins, its secretary, the day and year first above written.

RHODE ISLAND & MASSACHUSETTS RAILROAD COMPANY,
By Jonathan Chace, *President.*
Arnold B. Chace, *Secretary.*

[Seal of R. I. & Mass. R. R. Co.]

NEW YORK & NEW ENGLAND RAILROAD COMPANY,
By Wm. P. Shinn, *Vice-President.*
James W. Perkins, *Secretary.*

[Seal of N. Y. & N. E. R. R. Co.]

Commonwealth of Massachusetts.

Suffolk, ss. Boston, Nov. 21, 1887. Then personally appeared before me the above-named Wm. P. Shinn, and acknowledged the foregoing instrument to be the free act and deed of the New York & New England Railway Company.

R. M. Saltonstall,
Justice of the Peace.

State of Rhode Island.

County of Providence, ss. Providence, Nov. 22, 1887. Then personally appeared before me the above-named Jonathan Chace, and acknowledged the foregoing instrument to be the free act and deed of the Rhode Island & Massachusetts Railroad Company.

Raymond G. Mowry,
[Seal.] *Notary Public.*

AGREEMENT

FOR CONSOLIDATION OF THE CAMBRIDGE RAILROAD COMPANY AND THE ARLINGTON HORSE RAILROAD COMPANY.

THIS AGREEMENT, by and between the Cambridge Railroad Company, party of the first part, and the Arlington Horse Railroad Company, party of the second part, each of said parties being a street railway company and corporation, established under the laws of the Commonwealth of Massachusetts, *witnesseth*, that,

Whereas, Both of said parties believe it to be for their common interest, as well as for the advantage of the public, that they should unite and consolidate, and become one corporation; and

Whereas, By chapter 134 of the Acts of the Legislature of said Commonwealth, passed in the year 1864, such union and consolidation is authorized;

Now, It is mutually agreed, by and between said parties, by virtue of the aforesaid legislative Act, and any and every other power us enabling, that said companies shall and do hereby unite and consolidate with each other, upon the following terms and conditions, subject, however, to the provisions of said Act: —

First. The name of the consolidated company shall be the Cambridge Railroad Company.

Second. The consolidated company shall have a capital stock equal to the combined capital of both said companies; to wit, a capital of nineteen hundred and seventy-five thousand dollars, divided into nineteen thousand seven hundred and fifty shares, of the par value of one hundred dollars each. The certificates of stock amounting to nineteen hundred and fifty thousand dollars now lawfully held by stockholders of the party of the first part shall be deemed the certificates of stock of the consolidated company; and new certificates of the consolidated company, to the amount of twenty-five thousand dollars, shall be issued to the lawful stockholders of the party of the second part, upon the surrender to the consolidated company by said stockholders of the party of the second part of their respective certificates of stock in said Arlington Horse Railroad Company.

Third. Said consolidated company shall assume and pay all the debts and other legal liabilities of each of said parties.

Fourth. Said consolidated company shall have, hold, own, possess and enjoy all the property of every description, together with all the franchises, locations, rights, powers and privileges of each of said parties, and is hereby authorized to prosecute or defend, in its own name or the name of either of said consolidating companies, any suit or proceeding which it may deem expedient; and said parties do severally hereby grant, assign and convey to said consolidated company all their respective property, franchises, locations, rights, powers and privileges, to have and to hold unto said consolidated company, its successors and assigns, to its and their use and behoof forever.

Fifth. The organization, directors and other officers, corporate seal, by-laws, books of account, rules and regulations of the party of the first part, shall be the organization, directors, officers, seal, books, by-laws, rules and regulations of the consolidated company, until others are duly substituted in place thereof by said last-named company, its agents or officers.

Sixth. The parties hereto severally covenant and agree that they severally and their respective agents and officers will do all such further acts, execute all such further papers, and aid in securing all such further legislation, as may be necessary or convenient in effecting the complete union and consolidation intended by these presents.

Seventh. This instrument shall take effect immediately upon its execution.

IN TESTIMONY WHEREOF, both parties to this instrument have severally caused their corporate seals to be hereto affixed, and these presents to be executed in their names and behalf by their respective presidents thereto duly authorized on this ninth day of November, in the year of our Lord eighteen hundred and eighty-seven.

[Seal.] CAMBRIDGE RAILROAD COMPANY,
By PRENTISS CUMMINGS, *President.*

[Seal.] ARLINGTON HORSE RAILROAD COMPANY,
By PRENTISS CUMMINGS, *President.*

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. CAMBRIDGE, Nov. 9, 1887. Then personally appeared the above-named Prentiss Cummings, and acknowledged the foregoing instrument as the free act and deed of the Cambridge Railroad Company.

Before me, ELMER P. HOWE,
Justice of the Peace.

COMMONWEALTH OF MASSACHUSETTS.

MIDDLESEX, ss. CAMBRIDGE, Nov. 9, 1887. Then personally appeared the above-named Prentiss Cummings, and acknowledged the foregoing instrument as the free act and deed of the Arlington Horse Railroad Company.

Before me, ELMER P. HOWE,
Justice of the Peace.

At a duly notified meeting of the stockholders of the Arlington Horse Railroad Company, holden this nineteenth day of September, A. D. 1887, the question of the consolidation of this company with the Cambridge Railroad Company being duly under consideration, the foregoing agreement was read to the meeting; and it was

Voted, That the president be authorized to execute and acknowledge, in behalf of this company, said agreement for the consolidation of said company with the Cambridge Railroad Company.

The whole number of shares voting on the above was two hundred and seventy-two (272), all of which were in favor of said vote. When the result of said ballot was announced, the president declared said vote duly carried, a majority in interest of all the stockholders having voted in favor thereof, and no objection was made.

A true record.

Attest: JOSEPH H. TYLER,
Clerk of the Arlington Horse Railroad Company.

At a duly notified meeting of the stockholders of the Cambridge Railroad Company, holden this ninth day of November, A. D. 1887, the question of the consolidation of said company with the Arlington Horse Railroad Company being duly under consideration, the foregoing agreement was read to the meeting; and it was

Voted, That the president be authorized, in the name and behalf of the company, to sign, seal, execute and acknowledge the foregoing agreement for the consolidation of this company with the Arlington Horse Railroad Company.

The whole number of shares voting on the above was sixteen thousand and twenty-three (16,023), all of which were in favor of said vote. When the result of said ballot was announced, the president declared said vote duly carried, a majority in interest of all the stockholders having voted in favor thereof, and no objection was made.

A true record.

Attest: FRANKLIN PERRIN,
Clerk of the Cambridge Railroad Company.

[Marginal entry on first page.]

CAMBRIDGE, Nov. 18, 1887. Received and entered deed and votes with the Middlesex South District Deeds, book 1826, pages 260 and 262. Attest: HENRY A. STEVENS, *Assistant Registrar.*

BOSTON, Nov. 13, 1888. I hereby certify that the above is a true copy of the contract of consolidation between the Cambridge Railroad Company and the Arlington Horse Railroad Company, on the files of the West End Street Railroad Company.

PRENTISS CUMMINGS,
Clerk of the West End Street Railway Company.

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